

HOBBS OCD

APR 21 2016

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COG Operating, LLC

Lea County, NM

Sec 27, T22S, R34E

Squints Federal Com #7H

Wellbore #1

Design #1

DDC Anticollision Report

08 June, 2015



APR 25 2016



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	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	20,217.1	Design #1 (Wellbore #1)	MWD default	MWD - Standard	

Summary							
Site Name Offset Well - Wellbore - Design	Reference Measured	Offset Measured	Distance		Separation Factor	Warning	
	Depth (usft)	Depth (usft)	Between Centres (usft)	Between Ellipses (usft)			
Sec 27, T22S, R34E							
Squints Federal Com #2H - Wellbore #1 - Design #1	9,902.5	9,906.5	1,122.0	1,077.8	25.369	CC	
Squints Federal Com #2H - Wellbore #1 - Design #1	10,025.0	10,027.7	1,122.2	1,077.4	25.066	ES	
Squints Federal Com #2H - Wellbore #1 - Design #1	15,100.0	15,796.7	1,413.5	1,260.7	9.248	SF	
Squints Federal Com #3H - Wellbore #1 - Design #1	9,910.4	9,911.4	29.9	-14.4	0.676	Level 1, CC	
Squints Federal Com #3H - Wellbore #1 - Design #1	9,925.0	9,926.0	29.9	-14.4	0.675	Level 1, SF	
Squints Federal Com #3H - Wellbore #1 - Design #1	9,950.0	9,950.9	30.0	-14.4	0.675	Level 1, ES	
Squints Federal Com #4H - Wellbore #1 - Design #1	9,935.8	9,936.8	1,349.7	1,305.4	30.419	CC	
Squints Federal Com #4H - Wellbore #1 - Design #1	20,217.1	20,939.6	1,566.7	1,246.8	4.897	ES, SF	
Squints Federal Com #6H - Wellbore #1 - Design #1	9,902.5	9,905.5	1,092.2	1,048.0	24.696	CC	
Squints Federal Com #6H - Wellbore #1 - Design #1	15,000.0	14,966.6	1,138.6	959.0	6.341	ES	
Squints Federal Com #6H - Wellbore #1 - Design #1	15,100.0	14,966.6	1,148.6	967.3	6.335	SF	
Squints Federal Com #8H - Wellbore #1 - Design #1	9,858.0	9,859.0	1,319.7	1,275.7	29.979	CC	
Squints Federal Com #8H - Wellbore #1 - Design #1	20,217.1	20,185.1	1,320.1	952.2	3.588	ES, SF	

Offset Design:	Sec 27, T22S, R34E - Squints Federal Com #2H - Wellbore #1 - Design #1										Offset Site Error:	0.0 usft
Survey Program:	0-MWD default										Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning
0.0	0.0	4.0	4.0	0.0	0.0	89.53	9.2	1,122.0	1,122.0			
100.0	100.0	104.0	104.0	0.1	0.1	89.53	9.2	1,122.0	1,122.0	1,121.9	6,838.381	
200.0	200.0	204.0	204.0	0.3	0.3	89.53	9.2	1,122.0	1,122.0	1,121.4	1,828.580	
300.0	300.0	304.0	304.0	0.5	0.5	89.53	9.2	1,122.0	1,122.0	1,121.0	1,055.396	
400.0	400.0	404.0	404.0	0.8	0.8	89.53	9.2	1,122.0	1,122.0	1,120.5	741.757	
500.0	500.0	504.0	504.0	1.0	1.0	89.53	9.2	1,122.0	1,122.0	1,120.1	571.824	
600.0	600.0	604.0	604.0	1.2	1.2	89.53	9.2	1,122.0	1,122.0	1,119.6	465.240	
700.0	700.0	704.0	704.0	1.4	1.4	89.53	9.2	1,122.0	1,122.0	1,119.2	392.146	
800.0	800.0	804.0	804.0	1.7	1.7	89.53	9.2	1,122.0	1,122.0	1,118.7	338.902	
900.0	900.0	904.0	904.0	1.9	1.9	89.53	9.2	1,122.0	1,122.0	1,118.3	298.388	
1,000.0	1,000.0	1,004.0	1,004.0	2.1	2.1	89.53	9.2	1,122.0	1,122.0	1,117.8	266.526	
1,100.0	1,100.0	1,104.0	1,104.0	2.3	2.3	89.53	9.2	1,122.0	1,122.0	1,117.4	240.812	
1,200.0	1,200.0	1,204.0	1,204.0	2.5	2.6	89.53	9.2	1,122.0	1,122.0	1,116.9	219.623	
1,300.0	1,300.0	1,304.0	1,304.0	2.8	2.8	89.53	9.2	1,122.0	1,122.0	1,116.5	201.861	
1,400.0	1,400.0	1,404.0	1,404.0	3.0	3.0	89.53	9.2	1,122.0	1,122.0	1,116.0	186.757	

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



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Anticollision Report



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Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:
Sec 27, T22S, R34E - Squints Federal Com #2H - Wellbore #1 - Design #1												0.0 usft
Survey Program: 0-MWD default												Offset Well Error:
												0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning
1,500.0	1,500.0	1,504.0	1,504.0	3.2	3.2	89.53	9.2	1,122.0	1,122.0	1,115.6	173.757	
1,600.0	1,600.0	1,604.0	1,604.0	3.4	3.5	89.53	9.2	1,122.0	1,122.0	1,115.1	162.448	
1,700.0	1,700.0	1,704.0	1,704.0	3.7	3.7	89.53	9.2	1,122.0	1,122.0	1,114.7	152.521	
1,800.0	1,800.0	1,804.0	1,804.0	3.9	3.9	89.53	9.2	1,122.0	1,122.0	1,114.2	143.738	
1,900.0	1,900.0	1,904.0	1,904.0	4.1	4.1	89.53	9.2	1,122.0	1,122.0	1,113.8	135.911	
2,000.0	2,000.0	2,004.0	2,004.0	4.3	4.4	89.53	9.2	1,122.0	1,122.0	1,113.3	128.893	
2,100.0	2,100.0	2,104.0	2,104.0	4.6	4.6	89.53	9.2	1,122.0	1,122.0	1,112.9	122.564	
2,200.0	2,200.0	2,204.0	2,204.0	4.8	4.8	89.53	9.2	1,122.0	1,122.0	1,112.4	116.827	
2,300.0	2,300.0	2,304.0	2,304.0	5.0	5.0	89.53	9.2	1,122.0	1,122.0	1,112.0	111.604	
2,400.0	2,400.0	2,404.0	2,404.0	5.2	5.3	89.53	9.2	1,122.0	1,122.0	1,111.5	106.827	
2,500.0	2,500.0	2,504.0	2,504.0	5.5	5.5	89.53	9.2	1,122.0	1,122.0	1,111.1	102.443	
2,600.0	2,600.0	2,604.0	2,604.0	5.7	5.7	89.53	9.2	1,122.0	1,122.0	1,110.6	98.404	
2,700.0	2,700.0	2,704.0	2,704.0	5.9	5.9	89.53	9.2	1,122.0	1,122.0	1,110.2	94.671	
2,800.0	2,800.0	2,804.0	2,804.0	6.1	6.2	89.53	9.2	1,122.0	1,122.0	1,109.7	91.212	
2,900.0	2,900.0	2,904.0	2,904.0	6.4	6.4	89.53	9.2	1,122.0	1,122.0	1,109.3	87.996	
3,000.0	3,000.0	3,004.0	3,004.0	6.6	6.6	89.53	9.2	1,122.0	1,122.0	1,108.8	85.000	
3,100.0	3,100.0	3,104.0	3,104.0	6.8	6.8	89.53	9.2	1,122.0	1,122.0	1,108.4	82.200	
3,200.0	3,200.0	3,204.0	3,204.0	7.0	7.1	89.53	9.2	1,122.0	1,122.0	1,107.9	79.580	
3,300.0	3,300.0	3,304.0	3,304.0	7.3	7.3	89.53	9.2	1,122.0	1,122.0	1,107.5	77.121	
3,400.0	3,400.0	3,404.0	3,404.0	7.5	7.5	89.53	9.2	1,122.0	1,122.0	1,107.0	74.809	
3,500.0	3,500.0	3,504.0	3,504.0	7.7	7.7	89.53	9.2	1,122.0	1,122.0	1,106.6	72.632	
3,600.0	3,600.0	3,604.0	3,604.0	7.9	8.0	89.53	9.2	1,122.0	1,122.0	1,106.1	70.579	
3,700.0	3,700.0	3,704.0	3,704.0	8.2	8.2	89.53	9.2	1,122.0	1,122.0	1,105.7	68.638	
3,800.0	3,800.0	3,804.0	3,804.0	8.4	8.4	89.53	9.2	1,122.0	1,122.0	1,105.2	66.801	
3,900.0	3,900.0	3,904.0	3,904.0	8.6	8.6	89.53	9.2	1,122.0	1,122.0	1,104.8	65.060	
4,000.0	4,000.0	4,004.0	4,004.0	8.8	8.9	89.53	9.2	1,122.0	1,122.0	1,104.3	63.407	
4,100.0	4,100.0	4,104.0	4,104.0	9.1	9.1	89.53	9.2	1,122.0	1,122.0	1,103.9	61.836	
4,200.0	4,200.0	4,204.0	4,204.0	9.3	9.3	89.53	9.2	1,122.0	1,122.0	1,103.4	60.341	
4,300.0	4,300.0	4,304.0	4,304.0	9.5	9.5	89.53	9.2	1,122.0	1,122.0	1,103.0	58.917	
4,400.0	4,400.0	4,404.0	4,404.0	9.7	9.8	89.53	9.2	1,122.0	1,122.0	1,102.5	57.558	
4,500.0	4,500.0	4,504.0	4,504.0	10.0	10.0	89.53	9.2	1,122.0	1,122.0	1,102.1	56.261	
4,600.0	4,600.0	4,604.0	4,604.0	10.2	10.2	89.53	9.2	1,122.0	1,122.0	1,101.6	55.021	
4,700.0	4,700.0	4,704.0	4,704.0	10.4	10.4	89.53	9.2	1,122.0	1,122.0	1,101.2	53.834	
4,800.0	4,800.0	4,804.0	4,804.0	10.6	10.7	89.53	9.2	1,122.0	1,122.0	1,100.7	52.697	
4,900.0	4,900.0	4,904.0	4,904.0	10.9	10.9	89.53	9.2	1,122.0	1,122.0	1,100.3	51.608	
5,000.0	5,000.0	5,004.0	5,004.0	11.1	11.1	89.53	9.2	1,122.0	1,122.0	1,099.8	50.562	
5,100.0	5,100.0	5,104.0	5,104.0	11.3	11.3	89.53	9.2	1,122.0	1,122.0	1,099.4	49.558	
5,200.0	5,200.0	5,204.0	5,204.0	11.5	11.5	89.53	9.2	1,122.0	1,122.0	1,098.9	48.594	
5,300.0	5,300.0	5,304.0	5,304.0	11.8	11.8	89.53	9.2	1,122.0	1,122.0	1,098.5	47.666	
5,400.0	5,400.0	5,404.0	5,404.0	12.0	12.0	89.53	9.2	1,122.0	1,122.0	1,098.0	46.772	
5,500.0	5,500.0	5,504.0	5,504.0	12.2	12.2	89.53	9.2	1,122.0	1,122.0	1,097.6	45.912	
5,600.0	5,600.0	5,604.0	5,604.0	12.4	12.4	89.53	9.2	1,122.0	1,122.0	1,097.1	45.083	
5,700.0	5,700.0	5,704.0	5,704.0	12.7	12.7	89.53	9.2	1,122.0	1,122.0	1,096.7	44.283	
5,800.0	5,800.0	5,804.0	5,804.0	12.9	12.9	89.53	9.2	1,122.0	1,122.0	1,096.3	43.511	
5,900.0	5,900.0	5,904.0	5,904.0	13.1	13.1	89.53	9.2	1,122.0	1,122.0	1,095.8	42.766	
6,000.0	6,000.0	6,004.0	6,004.0	13.3	13.3	89.53	9.2	1,122.0	1,122.0	1,095.4	42.045	
6,100.0	6,100.0	6,104.0	6,104.0	13.6	13.6	89.53	9.2	1,122.0	1,122.0	1,094.9	41.349	
6,200.0	6,200.0	6,204.0	6,204.0	13.8	13.8	89.53	9.2	1,122.0	1,122.0	1,094.5	40.675	
6,300.0	6,300.0	6,304.0	6,304.0	14.0	14.0	89.53	9.2	1,122.0	1,122.0	1,094.0	40.023	
6,400.0	6,400.0	6,404.0	6,404.0	14.2	14.2	89.53	9.2	1,122.0	1,122.0	1,093.6	39.391	
6,500.0	6,500.0	6,504.0	6,504.0	14.5	14.5	89.53	9.2	1,122.0	1,122.0	1,093.1	38.779	
6,600.0	6,600.0	6,604.0	6,604.0	14.7	14.7	89.53	9.2	1,122.0	1,122.0	1,092.7	38.186	

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



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Anticollision Report



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Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:
Sec 27, T22S, R34E - Squints Federal Com #2H - Wellbore #1 - Design #1												0.0 usft
Survey Program: 0-MWD default												Offset Well Error:
												0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi-Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning
6,700.0	6,700.0	6,704.0	6,704.0	14.9	14.9	89.53	9.2	1,122.0	1,122.0	1,092.2	37.610	
6,800.0	6,800.0	6,804.0	6,804.0	15.1	15.1	89.53	9.2	1,122.0	1,122.0	1,091.8	37.052	
6,900.0	6,900.0	6,904.0	6,904.0	15.4	15.4	89.53	9.2	1,122.0	1,122.0	1,091.3	36.510	
7,000.0	7,000.0	7,004.0	7,004.0	15.6	15.6	89.53	9.2	1,122.0	1,122.0	1,090.9	35.984	
7,100.0	7,100.0	7,104.0	7,104.0	15.8	15.8	89.53	9.2	1,122.0	1,122.0	1,090.4	35.472	
7,200.0	7,200.0	7,204.0	7,204.0	16.0	16.0	89.53	9.2	1,122.0	1,122.0	1,090.0	34.975	
7,300.0	7,300.0	7,304.0	7,304.0	16.3	16.3	89.53	9.2	1,122.0	1,122.0	1,089.5	34.492	
7,400.0	7,400.0	7,404.0	7,404.0	16.5	16.5	89.53	9.2	1,122.0	1,122.0	1,089.1	34.022	
7,500.0	7,500.0	7,504.0	7,504.0	16.7	16.7	89.53	9.2	1,122.0	1,122.0	1,088.6	33.564	
7,600.0	7,600.0	7,604.0	7,604.0	16.9	16.9	89.53	9.2	1,122.0	1,122.0	1,088.2	33.119	
7,700.0	7,700.0	7,704.0	7,704.0	17.2	17.2	89.53	9.2	1,122.0	1,122.0	1,087.7	32.685	
7,800.0	7,800.0	7,804.0	7,804.0	17.4	17.4	89.53	9.2	1,122.0	1,122.0	1,087.3	32.263	
7,900.0	7,900.0	7,904.0	7,904.0	17.6	17.6	89.53	9.2	1,122.0	1,122.0	1,086.8	31.851	
8,000.0	8,000.0	8,004.0	8,004.0	17.8	17.8	89.53	9.2	1,122.0	1,122.0	1,086.4	31.450	
8,100.0	8,100.0	8,104.0	8,104.0	18.1	18.1	89.53	9.2	1,122.0	1,122.0	1,085.9	31.058	
8,200.0	8,200.0	8,204.0	8,204.0	18.3	18.3	89.53	9.2	1,122.0	1,122.0	1,085.5	30.677	
8,300.0	8,300.0	8,304.0	8,304.0	18.5	18.5	89.53	9.2	1,122.0	1,122.0	1,085.0	30.304	
8,400.0	8,400.0	8,404.0	8,404.0	18.7	18.7	89.53	9.2	1,122.0	1,122.0	1,084.6	29.941	
8,500.0	8,500.0	8,504.0	8,504.0	19.0	19.0	89.53	9.2	1,122.0	1,122.0	1,084.1	29.586	
8,600.0	8,600.0	8,604.0	8,604.0	19.2	19.2	89.53	9.2	1,122.0	1,122.0	1,083.7	29.239	
8,700.0	8,700.0	8,704.0	8,704.0	19.4	19.4	89.53	9.2	1,122.0	1,122.0	1,083.2	28.901	
8,800.0	8,800.0	8,804.0	8,804.0	19.6	19.6	89.53	9.2	1,122.0	1,122.0	1,082.8	28.570	
8,900.0	8,900.0	8,904.0	8,904.0	19.9	19.9	89.53	9.2	1,122.0	1,122.0	1,082.3	28.247	
9,000.0	9,000.0	9,004.0	9,004.0	20.1	20.1	89.53	9.2	1,122.0	1,122.0	1,081.9	27.931	
9,100.0	9,100.0	9,104.0	9,104.0	20.3	20.3	89.53	9.2	1,122.0	1,122.0	1,081.4	27.621	
9,200.0	9,200.0	9,204.0	9,204.0	20.5	20.5	89.53	9.2	1,122.0	1,122.0	1,081.0	27.319	
9,300.0	9,300.0	9,304.0	9,304.0	20.8	20.8	89.53	9.2	1,122.0	1,122.0	1,080.5	27.023	
9,400.0	9,400.0	9,404.0	9,404.0	21.0	21.0	89.53	9.2	1,122.0	1,122.0	1,080.1	26.734	
9,500.0	9,500.0	9,504.0	9,504.0	21.2	21.2	89.53	9.2	1,122.0	1,122.0	1,079.6	26.451	
9,600.0	9,600.0	9,604.0	9,604.0	21.4	21.4	89.53	9.2	1,122.0	1,122.0	1,079.2	26.173	
9,700.0	9,700.0	9,704.0	9,704.0	21.7	21.7	89.53	9.2	1,122.0	1,122.0	1,078.7	25.902	
9,800.0	9,800.0	9,804.0	9,804.0	21.9	21.9	89.53	9.2	1,122.0	1,122.0	1,078.3	25.636	
9,902.5	9,902.5	9,906.5	9,906.5	22.1	22.1	89.53	9.2	1,122.0	1,122.0	1,077.8	25.369 CC	
9,925.0	9,925.0	9,929.0	9,929.0	22.2	22.2	90.07	9.2	1,122.0	1,122.0	1,077.7	25.311	
9,950.0	9,949.9	9,953.9	9,953.9	22.2	22.2	90.16	9.2	1,122.0	1,122.0	1,077.6	25.248	
9,975.0	9,974.7	9,978.7	9,978.7	22.3	22.3	90.31	9.2	1,122.0	1,122.1	1,077.5	25.186	
10,000.0	9,999.3	10,003.3	10,003.3	22.3	22.3	90.53	9.2	1,122.0	1,122.1	1,077.4	25.125	
10,025.0	10,023.7	10,027.7	10,027.7	22.4	22.4	90.81	9.2	1,122.0	1,122.2	1,077.4	25.066 ES	
10,050.0	10,047.7	10,051.7	10,051.7	22.4	22.4	91.14	9.2	1,122.0	1,122.3	1,077.4	25.010	
10,075.0	10,071.3	10,075.3	10,075.3	22.5	22.5	91.51	9.2	1,122.0	1,122.5	1,077.5	24.957	
10,100.0	10,094.4	10,098.4	10,098.4	22.5	22.6	91.92	9.2	1,122.0	1,122.8	1,077.7	24.907	
10,125.0	10,117.0	10,121.0	10,121.0	22.6	22.6	92.36	9.2	1,122.0	1,123.2	1,078.0	24.862	
10,150.0	10,139.1	10,143.1	10,143.1	22.6	22.7	92.81	9.2	1,122.0	1,123.8	1,078.6	24.822	
10,175.0	10,160.4	10,164.4	10,164.4	22.7	22.7	93.28	9.2	1,122.0	1,124.6	1,079.3	24.788	
10,200.0	10,181.1	10,185.1	10,185.1	22.7	22.7	93.75	9.2	1,122.0	1,125.7	1,080.2	24.761	
10,225.0	10,201.0	10,205.0	10,205.0	22.8	22.8	94.20	9.2	1,122.0	1,127.0	1,081.4	24.742	
10,250.0	10,220.1	10,224.1	10,224.1	22.9	22.8	94.63	9.2	1,122.0	1,128.6	1,083.0	24.731	
10,275.0	10,238.3	10,242.3	10,242.3	22.9	22.9	95.03	9.2	1,122.0	1,130.6	1,084.9	24.729	
10,300.0	10,255.6	10,259.6	10,259.6	23.0	22.9	95.38	9.2	1,122.0	1,133.0	1,087.1	24.735	
10,325.0	10,272.0	10,276.0	10,276.0	23.1	22.9	95.67	9.2	1,122.0	1,135.7	1,089.8	24.750	
10,350.0	10,287.3	10,291.3	10,291.3	23.1	23.0	95.89	9.2	1,122.0	1,138.9	1,093.0	24.773	
10,375.0	10,301.6	10,305.6	10,305.6	23.2	23.0	96.04	9.2	1,122.0	1,142.7	1,096.6	24.803	

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 #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	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)	Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning:	
10,400.0	10,314.7	10,318.7	10,318.7	23.3	23.0	96.09	9.2	1,122.0	1,146.9	1,100.7	24.840		
10,425.0	10,326.8	10,330.8	10,330.8	23.4	23.1	96.05	9.2	1,122.0	1,151.6	1,105.3	24.883		
10,450.0	10,337.7	10,341.7	10,341.7	23.5	23.1	95.90	9.2	1,122.0	1,156.9	1,110.5	24.932		
10,475.0	10,347.3	10,351.3	10,351.3	23.6	23.1	95.63	9.2	1,122.0	1,162.7	1,116.2	24.984		
10,500.0	10,355.8	10,359.8	10,359.8	23.7	23.1	95.25	9.2	1,122.0	1,169.1	1,122.4	25.042		
10,525.0	10,363.0	10,367.0	10,367.0	23.8	23.2	94.74	9.2	1,122.0	1,176.0	1,129.2	25.105		
10,550.0	10,369.0	10,373.0	10,373.0	24.0	23.2	94.09	9.2	1,122.0	1,183.5	1,136.5	25.173		
10,575.0	10,373.7	10,377.7	10,377.7	24.1	23.2	93.31	9.2	1,122.0	1,191.6	1,144.4	25.249		
10,600.0	10,377.1	10,381.1	10,381.1	24.2	23.2	92.38	9.2	1,122.0	1,200.1	1,152.7	25.335		
10,625.0	10,379.2	10,383.2	10,383.2	24.4	23.2	91.32	9.2	1,122.0	1,209.2	1,161.6	25.433		
10,650.0	10,380.0	10,384.0	10,384.0	24.5	23.2	90.13	9.2	1,122.0	1,218.7	1,171.0	25.548		
10,655.5	10,380.0	10,384.0	10,384.0	24.5	23.2	89.85	9.2	1,122.0	1,220.9	1,173.1	25.575		
10,700.0	10,379.7	10,383.7	10,383.7	24.8	23.2	89.83	9.2	1,122.0	1,239.1	1,191.1	25.806		
10,800.0	10,379.0	10,383.0	10,383.0	25.5	23.2	89.80	9.2	1,122.0	1,284.7	1,236.0	26.366		
10,900.0	10,378.4	10,382.4	10,382.4	26.4	23.2	89.77	9.2	1,122.0	1,336.3	1,286.7	26.972		
11,000.0	10,377.8	10,381.8	10,381.8	27.3	23.2	89.74	9.2	1,122.0	1,393.1	1,342.7	27.610		
11,100.0	10,377.2	11,969.4	11,233.7	28.3	30.0	127.16	943.4	1,116.6	1,411.5	1,364.3	29.924		
11,200.0	10,376.5	12,069.4	11,232.3	29.4	31.0	127.13	1,043.4	1,116.0	1,411.3	1,362.3	28.809		
11,300.0	10,375.9	12,169.4	11,230.9	30.5	32.1	127.09	1,143.4	1,115.4	1,411.1	1,360.1	27.709		
11,400.0	10,375.3	12,269.4	11,229.5	31.7	33.3	127.06	1,243.3	1,114.9	1,410.8	1,357.9	26.636		
11,500.0	10,374.7	12,369.4	11,228.1	33.0	34.5	127.03	1,343.3	1,114.3	1,410.6	1,355.5	25.599		
11,600.0	10,374.0	12,469.4	11,226.7	34.3	35.7	126.99	1,443.3	1,113.7	1,410.4	1,353.1	24.602		
11,700.0	10,373.4	12,569.4	11,225.3	35.7	37.1	126.96	1,543.3	1,113.1	1,410.2	1,350.5	23.651		
11,800.0	10,372.8	12,669.4	11,223.9	37.1	38.4	126.93	1,643.3	1,112.6	1,410.0	1,348.0	22.745		
11,900.0	10,372.2	12,769.3	11,222.5	38.5	39.8	126.90	1,743.3	1,112.0	1,409.7	1,345.3	21.885		
12,000.0	10,371.5	12,869.3	11,221.1	40.0	41.3	126.86	1,843.2	1,111.4	1,409.5	1,342.6	21.070		
12,100.0	10,370.9	12,969.3	11,219.7	41.5	42.7	126.83	1,943.2	1,110.8	1,409.3	1,339.9	20.300		
12,200.0	10,370.3	13,069.3	11,218.3	43.0	44.2	126.80	2,043.2	1,110.3	1,409.1	1,337.1	19.572		
12,300.0	10,369.6	13,169.3	11,216.9	44.6	45.7	126.77	2,143.2	1,109.7	1,408.9	1,334.3	18.884		
12,400.0	10,369.0	13,269.3	11,215.5	46.2	47.3	126.73	2,243.2	1,109.1	1,408.6	1,331.4	18.235		
12,500.0	10,368.4	13,369.3	11,214.1	47.7	48.8	126.70	2,343.2	1,108.5	1,408.4	1,328.5	17.621		
12,600.0	10,367.8	13,469.3	11,212.7	49.3	50.4	126.67	2,443.2	1,107.9	1,408.2	1,325.6	17.041		
12,700.0	10,367.1	13,569.3	11,211.3	51.0	52.0	126.63	2,543.1	1,107.4	1,408.0	1,322.6	16.493		
12,800.0	10,366.5	13,669.3	11,209.8	52.6	53.6	126.60	2,643.1	1,106.8	1,407.8	1,319.6	15.974		
12,900.0	10,365.9	13,769.3	11,208.4	54.2	55.2	126.57	2,743.1	1,106.2	1,407.6	1,316.7	15.483		
13,000.0	10,365.3	13,869.3	11,207.0	55.9	56.8	126.54	2,843.1	1,105.6	1,407.3	1,313.6	15.018		
13,100.0	10,364.6	13,969.3	11,205.6	57.6	58.5	126.50	2,943.1	1,105.1	1,407.1	1,310.6	14.577		
13,200.0	10,364.0	14,069.3	11,204.2	59.2	60.1	126.47	3,043.1	1,104.5	1,406.9	1,307.5	14.158		
13,300.0	10,363.4	14,169.3	11,202.8	60.9	61.8	126.44	3,143.1	1,103.9	1,406.7	1,304.5	13.760		
13,400.0	10,362.7	14,269.3	11,201.4	62.6	63.4	126.40	3,243.0	1,103.3	1,406.5	1,301.4	13.383		
13,500.0	10,362.1	14,369.3	11,200.0	64.3	65.1	126.37	3,343.0	1,102.7	1,406.3	1,298.3	13.023		
13,600.0	10,361.5	14,469.3	11,198.6	66.0	66.8	126.34	3,443.0	1,102.2	1,406.1	1,295.2	12.681		
13,700.0	10,360.9	14,569.3	11,197.2	67.7	68.5	126.31	3,543.0	1,101.6	1,405.9	1,292.1	12.355		
13,800.0	10,360.2	14,669.3	11,195.8	69.4	70.2	126.27	3,643.0	1,101.0	1,405.6	1,288.9	12.044		
13,900.0	10,359.6	14,769.3	11,194.4	71.2	71.9	126.24	3,743.0	1,100.4	1,405.4	1,285.8	11.747		
14,000.0	10,359.0	14,869.3	11,193.0	72.9	73.6	126.21	3,842.9	1,099.9	1,405.2	1,282.6	11.463		
14,100.0	10,358.4	14,969.3	11,191.6	74.6	75.3	126.17	3,942.9	1,099.3	1,405.0	1,279.5	11.192		
14,200.0	10,357.7	15,069.3	11,190.2	76.4	77.1	126.14	4,042.9	1,098.7	1,404.8	1,276.3	10.932		
14,300.0	10,357.1	15,169.3	11,188.8	78.1	78.8	126.11	4,142.9	1,098.1	1,404.6	1,273.1	10.684		
14,400.0	10,356.5	15,269.3	11,187.4	79.8	80.5	126.07	4,242.9	1,097.5	1,404.4	1,269.9	10.446		
14,500.0	10,355.8	15,369.3	11,186.0	81.6	82.3	126.04	4,342.9	1,097.0	1,404.2	1,266.8	10.217		
14,600.0	10,355.2	15,469.3	11,184.6	83.3	84.0	126.01	4,442.9	1,096.4	1,404.0	1,263.6	9.998		

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 #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squires Federal Com #7H	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 #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
14,700.0	10,354.6	15,569.3	11,183.2	85.1	85.7	125.98	4,542.8	1,095.8	1,403.8	1,260.3	9.787	
14,800.0	10,354.0	15,669.2	11,181.8	86.9	87.5	125.94	4,642.8	1,095.2	1,403.6	1,257.1	9.585	
14,900.0	10,353.3	15,769.2	11,180.4	88.6	89.2	125.91	4,742.8	1,094.7	1,403.4	1,253.9	9.390	
14,918.8	10,353.2	15,788.0	11,180.1	88.9	89.6	125.90	4,761.6	1,094.5	1,403.3	1,253.3	9.354	
15,000.0	10,352.7	15,796.7	11,180.0	90.4	89.7	125.90	4,770.3	1,094.5	1,405.0	1,253.7	9.283	
15,100.0	10,352.1	15,796.7	11,180.0	92.1	89.7	125.90	4,770.3	1,094.5	1,413.5	1,260.7	9.248	SF
15,200.0	10,351.5	15,796.7	11,180.0	93.9	89.7	125.90	4,770.3	1,094.5	1,429.0	1,274.6	9.258	
15,300.0	10,350.8	15,796.7	11,180.0	95.7	89.7	125.90	4,770.3	1,094.5	1,451.2	1,295.3	9.312	
15,400.0	10,350.2	15,796.7	11,180.0	97.4	89.7	125.90	4,770.3	1,094.5	1,479.8	1,322.5	9.405	
15,500.0	10,349.6	15,796.7	11,180.0	99.2	89.7	125.90	4,770.3	1,094.5	1,514.5	1,355.7	9.535	
15,600.0	10,349.0	15,796.7	11,180.0	101.0	89.7	125.90	4,770.3	1,094.5	1,554.9	1,394.5	9.698	
15,700.0	10,348.3	15,796.7	11,180.0	102.8	89.7	125.90	4,770.3	1,094.5	1,600.5	1,438.7	9.890	
15,800.0	10,347.7	15,796.7	11,180.0	104.5	89.7	125.90	4,770.3	1,094.5	1,650.9	1,487.6	10.107	
15,900.0	10,347.1	15,796.7	11,180.0	106.3	89.7	125.90	4,770.3	1,094.5	1,705.7	1,540.9	10.348	
16,000.0	10,346.4	15,796.7	11,180.0	108.1	89.7	125.90	4,770.3	1,094.5	1,764.5	1,598.1	10.607	
16,100.0	10,345.8	15,796.7	11,180.0	109.9	89.7	125.90	4,770.3	1,094.5	1,826.8	1,659.0	10.884	
16,200.0	10,345.2	15,796.7	11,180.0	111.7	89.7	125.90	4,770.3	1,094.5	1,892.4	1,723.1	11.174	
16,300.0	10,344.6	15,796.7	11,180.0	113.5	89.7	125.90	4,770.3	1,094.5	1,960.9	1,790.0	11.476	
16,400.0	10,343.9	15,796.7	11,180.0	115.2	89.7	125.90	4,770.3	1,094.5	2,032.0	1,859.6	11.788	
16,500.0	10,343.3	15,796.7	11,180.0	117.0	89.7	125.90	4,770.3	1,094.5	2,105.5	1,931.6	12.109	
16,600.0	10,342.7	15,796.7	11,180.0	118.8	89.7	125.90	4,770.3	1,094.5	2,181.0	2,005.6	12.435	
16,700.0	10,342.1	15,796.7	11,180.0	120.6	89.7	125.90	4,770.3	1,094.5	2,258.5	2,081.6	12.767	
16,800.0	10,341.4	15,796.7	11,180.0	122.4	89.7	125.90	4,770.3	1,094.5	2,337.7	2,159.3	13.102	
16,900.0	10,340.8	15,796.7	11,180.0	124.2	89.7	125.90	4,770.3	1,094.5	2,418.4	2,238.5	13.441	
17,000.0	10,340.2	15,796.7	11,180.0	126.0	89.7	125.90	4,770.3	1,094.5	2,500.5	2,319.1	13.781	
17,100.0	10,339.5	15,796.7	11,180.0	127.8	89.7	125.90	4,770.3	1,094.5	2,583.9	2,400.9	14.123	
17,200.0	10,338.9	15,796.7	11,180.0	129.6	89.7	125.90	4,770.3	1,094.5	2,668.4	2,483.9	14.465	
17,300.0	10,338.3	15,796.7	11,180.0	131.4	89.7	125.90	4,770.3	1,094.5	2,754.0	2,568.0	14.807	
17,400.0	10,337.7	15,796.7	11,180.0	133.2	89.7	125.90	4,770.3	1,094.5	2,840.5	2,653.0	15.149	
17,500.0	10,337.0	15,796.7	11,180.0	135.0	89.7	125.90	4,770.3	1,094.5	2,927.8	2,738.8	15.489	
17,600.0	10,336.4	15,796.7	11,180.0	136.8	89.7	125.90	4,770.3	1,094.5	3,016.0	2,825.4	15.829	
17,700.0	10,335.8	15,796.7	11,180.0	138.6	89.7	125.90	4,770.3	1,094.5	3,104.8	2,912.8	16.166	
17,800.0	10,335.2	15,796.7	11,180.0	140.4	89.7	125.90	4,770.3	1,094.5	3,194.4	3,000.8	16.502	
17,900.0	10,334.5	15,796.7	11,180.0	142.2	89.7	125.90	4,770.3	1,094.5	3,284.5	3,089.4	16.835	
18,000.0	10,333.9	15,796.7	11,180.0	144.0	89.7	125.90	4,770.3	1,094.5	3,375.2	3,178.6	17.167	
18,100.0	10,333.3	15,796.7	11,180.0	145.8	89.7	125.90	4,770.3	1,094.5	3,466.4	3,268.2	17.495	
18,200.0	10,332.6	15,796.7	11,180.0	147.6	89.7	125.90	4,770.3	1,094.5	3,558.0	3,358.4	17.821	
18,300.0	10,332.0	15,796.7	11,180.0	149.4	89.7	125.90	4,770.3	1,094.5	3,650.2	3,449.0	18.144	
18,400.0	10,331.4	15,796.7	11,180.0	151.2	89.7	125.90	4,770.3	1,094.5	3,742.7	3,540.0	18.464	
18,500.0	10,330.8	15,796.7	11,180.0	153.0	89.7	125.90	4,770.3	1,094.5	3,835.6	3,631.3	18.782	
18,600.0	10,330.1	15,796.7	11,180.0	154.8	89.7	125.90	4,770.3	1,094.5	3,928.8	3,723.0	19.096	
18,700.0	10,329.5	15,796.7	11,180.0	156.6	89.7	125.90	4,770.3	1,094.5	4,022.4	3,815.1	19.407	
18,800.0	10,328.9	15,796.7	11,180.0	158.4	89.7	125.90	4,770.3	1,094.5	4,116.2	3,907.4	19.715	
18,900.0	10,328.3	15,796.7	11,180.0	160.2	89.7	125.90	4,770.3	1,094.5	4,210.4	4,000.1	20.020	
19,000.0	10,327.6	15,796.7	11,180.0	162.0	89.7	125.90	4,770.3	1,094.5	4,304.8	4,092.9	20.321	
19,100.0	10,327.0	15,796.7	11,180.0	163.8	89.7	125.90	4,770.3	1,094.5	4,399.4	4,186.1	20.620	
19,200.0	10,326.4	15,796.7	11,180.0	165.6	89.7	125.90	4,770.3	1,094.5	4,494.3	4,279.4	20.915	
19,300.0	10,325.8	15,796.7	11,180.0	167.4	89.7	125.90	4,770.3	1,094.5	4,589.4	4,373.0	21.207	
19,400.0	10,325.1	15,796.7	11,180.0	169.2	89.7	125.90	4,770.3	1,094.5	4,684.7	4,466.8	21.496	
19,500.0	10,324.5	15,796.7	11,180.0	171.0	89.7	125.90	4,770.3	1,094.5	4,780.2	4,560.8	21.782	
19,600.0	10,323.9	15,796.7	11,180.0	172.8	89.7	125.90	4,770.3	1,094.5	4,875.9	4,654.9	22.065	
19,700.0	10,323.2	15,796.7	11,180.0	174.6	89.7	125.90	4,770.3	1,094.5	4,971.8	4,749.3	22.344	

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 #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	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:	
19,800.0	10,322.6	15,796.7	11,180.0	176.4	89.7	125.90	4,770.3	1,094.5	5,067.8	4,843.8	22.621		
19,900.0	10,322.0	15,796.7	11,180.0	178.3	89.7	125.90	4,770.3	1,094.5	5,164.0	4,938.4	22.894		
20,000.0	10,321.4	15,796.7	11,180.0	180.1	89.7	125.90	4,770.3	1,094.5	5,260.3	5,033.2	23.164		
20,100.0	10,320.7	15,796.7	11,180.0	181.9	89.7	125.90	4,770.3	1,094.5	5,356.7	5,128.1	23.431		
20,200.0	10,320.1	15,796.7	11,180.0	183.7	89.7	125.90	4,770.3	1,094.5	5,453.3	5,223.1	23.695		
20,217.1	10,320.0	15,796.7	11,180.0	184.0	89.7	125.90	4,770.3	1,094.5	5,469.8	5,239.4	23.740		



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design: Sec 27, T22S, R34E - Squints Federal Com #3H - Wellbore #1 - Design #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD default												Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning:	
0.0	0.0	1.0	1.0	0.0	0.0	-90.38	-0.2	-29.9	29.9				
100.0	100.0	101.0	101.0	0.1	0.1	-90.38	-0.2	-29.9	29.9	29.7	190.043		
200.0	200.0	201.0	201.0	0.3	0.3	-90.38	-0.2	-29.9	29.9	29.3	49.270		
300.0	300.0	301.0	301.0	0.5	0.5	-90.38	-0.2	-29.9	29.9	28.8	28.304		
400.0	400.0	401.0	401.0	0.8	0.8	-90.38	-0.2	-29.9	29.9	28.4	19.855		
500.0	500.0	501.0	501.0	1.0	1.0	-90.38	-0.2	-29.9	29.9	27.9	15.291		
600.0	600.0	601.0	601.0	1.2	1.2	-90.38	-0.2	-29.9	29.9	27.5	12.433		
700.0	700.0	701.0	701.0	1.4	1.4	-90.38	-0.2	-29.9	29.9	27.0	10.475		
800.0	800.0	801.0	801.0	1.7	1.7	-90.38	-0.2	-29.9	29.9	26.6	9.050		
900.0	900.0	901.0	901.0	1.9	1.9	-90.38	-0.2	-29.9	29.9	26.1	7.966		
1,000.0	1,000.0	1,001.0	1,001.0	2.1	2.1	-90.38	-0.2	-29.9	29.9	25.7	7.114		
1,100.0	1,100.0	1,101.0	1,101.0	2.3	2.3	-90.38	-0.2	-29.9	29.9	25.2	6.427		
1,200.0	1,200.0	1,201.0	1,201.0	2.5	2.6	-90.38	-0.2	-29.9	29.9	24.8	5.860		
1,300.0	1,300.0	1,301.0	1,301.0	2.8	2.8	-90.38	-0.2	-29.9	29.9	24.3	5.386		
1,400.0	1,400.0	1,401.0	1,401.0	3.0	3.0	-90.38	-0.2	-29.9	29.9	23.9	4.982		
1,500.0	1,500.0	1,501.0	1,501.0	3.2	3.2	-90.38	-0.2	-29.9	29.9	23.4	4.635		
1,600.0	1,600.0	1,601.0	1,601.0	3.4	3.5	-90.38	-0.2	-29.9	29.9	23.0	4.333		
1,700.0	1,700.0	1,701.0	1,701.0	3.7	3.7	-90.38	-0.2	-29.9	29.9	22.6	4.068		
1,800.0	1,800.0	1,801.0	1,801.0	3.9	3.9	-90.38	-0.2	-29.9	29.9	22.1	3.834		
1,900.0	1,900.0	1,901.0	1,901.0	4.1	4.1	-90.38	-0.2	-29.9	29.9	21.7	3.625		
2,000.0	2,000.0	2,001.0	2,001.0	4.3	4.4	-90.38	-0.2	-29.9	29.9	21.2	3.437		
2,100.0	2,100.0	2,101.0	2,101.0	4.6	4.6	-90.38	-0.2	-29.9	29.9	20.8	3.269		
2,200.0	2,200.0	2,201.0	2,201.0	4.8	4.8	-90.38	-0.2	-29.9	29.9	20.3	3.115		
2,300.0	2,300.0	2,301.0	2,301.0	5.0	5.0	-90.38	-0.2	-29.9	29.9	19.9	2.976		
2,400.0	2,400.0	2,401.0	2,401.0	5.2	5.2	-90.38	-0.2	-29.9	29.9	19.4	2.849		
2,500.0	2,500.0	2,501.0	2,501.0	5.5	5.5	-90.38	-0.2	-29.9	29.9	19.0	2.732		
2,600.0	2,600.0	2,601.0	2,601.0	5.7	5.7	-90.38	-0.2	-29.9	29.9	18.5	2.624		
2,700.0	2,700.0	2,701.0	2,701.0	5.9	5.9	-90.38	-0.2	-29.9	29.9	18.1	2.524		
2,800.0	2,800.0	2,801.0	2,801.0	6.1	6.1	-90.38	-0.2	-29.9	29.9	17.6	2.432		
2,900.0	2,900.0	2,901.0	2,901.0	6.4	6.4	-90.38	-0.2	-29.9	29.9	17.2	2.346		
3,000.0	3,000.0	3,001.0	3,001.0	6.6	6.6	-90.38	-0.2	-29.9	29.9	16.7	2.266		
3,100.0	3,100.0	3,101.0	3,101.0	6.8	6.8	-90.38	-0.2	-29.9	29.9	16.3	2.192		
3,200.0	3,200.0	3,201.0	3,201.0	7.0	7.0	-90.38	-0.2	-29.9	29.9	15.8	2.122		
3,300.0	3,300.0	3,301.0	3,301.0	7.3	7.3	-90.38	-0.2	-29.9	29.9	15.4	2.056		
3,400.0	3,400.0	3,401.0	3,401.0	7.5	7.5	-90.38	-0.2	-29.9	29.9	14.9	1.994		
3,500.0	3,500.0	3,501.0	3,501.0	7.7	7.7	-90.38	-0.2	-29.9	29.9	14.5	1.936		
3,600.0	3,600.0	3,601.0	3,601.0	7.9	7.9	-90.38	-0.2	-29.9	29.9	14.0	1.882		
3,700.0	3,700.0	3,701.0	3,701.0	8.2	8.2	-90.38	-0.2	-29.9	29.9	13.6	1.830		
3,800.0	3,800.0	3,801.0	3,801.0	8.4	8.4	-90.38	-0.2	-29.9	29.9	13.1	1.781		
3,900.0	3,900.0	3,901.0	3,901.0	8.6	8.6	-90.38	-0.2	-29.9	29.9	12.7	1.734		
4,000.0	4,000.0	4,001.0	4,001.0	8.8	8.8	-90.38	-0.2	-29.9	29.9	12.2	1.690		
4,100.0	4,100.0	4,101.0	4,101.0	9.1	9.1	-90.38	-0.2	-29.9	29.9	11.8	1.648		
4,200.0	4,200.0	4,201.0	4,201.0	9.3	9.3	-90.38	-0.2	-29.9	29.9	11.3	1.609		
4,300.0	4,300.0	4,301.0	4,301.0	9.5	9.5	-90.38	-0.2	-29.9	29.9	10.9	1.571		
4,400.0	4,400.0	4,401.0	4,401.0	9.7	9.7	-90.38	-0.2	-29.9	29.9	10.4	1.534		
4,500.0	4,500.0	4,501.0	4,501.0	10.0	10.0	-90.38	-0.2	-29.9	29.9	10.0	1.500	Level 3	
4,600.0	4,600.0	4,601.0	4,601.0	10.2	10.2	-90.38	-0.2	-29.9	29.9	9.5	1.467	Level 3	
4,700.0	4,700.0	4,701.0	4,701.0	10.4	10.4	-90.38	-0.2	-29.9	29.9	9.1	1.435	Level 3	
4,800.0	4,800.0	4,801.0	4,801.0	10.6	10.6	-90.38	-0.2	-29.9	29.9	8.6	1.405	Level 3	
4,900.0	4,900.0	4,901.0	4,901.0	10.9	10.9	-90.38	-0.2	-29.9	29.9	8.2	1.376	Level 3	
5,000.0	5,000.0	5,001.0	5,001.0	11.1	11.1	-90.38	-0.2	-29.9	29.9	7.7	1.348	Level 3	
5,100.0	5,100.0	5,101.0	5,101.0	11.3	11.3	-90.38	-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 Squires Federal Com #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squires Federal Com #7H	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 #3H - Wellbore #1 - Design #1												Offset Well Error:	0.0 usft
Survey Program: 0-MWD default													
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference		Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning		
5,200.0	5,200.0	5,201.0	5,201.0	11.5	11.5	-90.38	-0.2	-29.9	29.9	6.8	1.295 Level 3		
5,300.0	5,300.0	5,301.0	5,301.0	11.8	11.8	-90.38	-0.2	-29.9	29.9	6.4	1.271 Level 3		
5,400.0	5,400.0	5,401.0	5,401.0	12.0	12.0	-90.38	-0.2	-29.9	29.9	5.9	1.247 Level 2		
5,500.0	5,500.0	5,501.0	5,501.0	12.2	12.2	-90.38	-0.2	-29.9	29.9	5.5	1.224 Level 2		
5,600.0	5,600.0	5,601.0	5,601.0	12.4	12.4	-90.38	-0.2	-29.9	29.9	5.0	1.202 Level 2		
5,700.0	5,700.0	5,701.0	5,701.0	12.7	12.7	-90.38	-0.2	-29.9	29.9	4.6	1.180 Level 2		
5,800.0	5,800.0	5,801.0	5,801.0	12.9	12.9	-90.38	-0.2	-29.9	29.9	4.1	1.160 Level 2		
5,900.0	5,900.0	5,901.0	5,901.0	13.1	13.1	-90.38	-0.2	-29.9	29.9	3.7	1.140 Level 2		
6,000.0	6,000.0	6,001.0	6,001.0	13.3	13.3	-90.38	-0.2	-29.9	29.9	3.2	1.121 Level 2		
6,100.0	6,100.0	6,101.0	6,101.0	13.6	13.6	-90.38	-0.2	-29.9	29.9	2.8	1.102 Level 2		
6,200.0	6,200.0	6,201.0	6,201.0	13.8	13.8	-90.38	-0.2	-29.9	29.9	2.3	1.084 Level 2		
6,300.0	6,300.0	6,301.0	6,301.0	14.0	14.0	-90.38	-0.2	-29.9	29.9	1.9	1.067 Level 2		
6,400.0	6,400.0	6,401.0	6,401.0	14.2	14.2	-90.38	-0.2	-29.9	29.9	1.4	1.050 Level 2		
6,500.0	6,500.0	6,501.0	6,501.0	14.5	14.5	-90.38	-0.2	-29.9	29.9	1.0	1.034 Level 2		
6,600.0	6,600.0	6,601.0	6,601.0	14.7	14.7	-90.38	-0.2	-29.9	29.9	0.5	1.018 Level 2		
6,700.0	6,700.0	6,701.0	6,701.0	14.9	14.9	-90.38	-0.2	-29.9	29.9	0.1	1.002 Level 2		
6,800.0	6,800.0	6,801.0	6,801.0	15.1	15.1	-90.38	-0.2	-29.9	29.9	-0.4	0.988 Level 1		
6,900.0	6,900.0	6,901.0	6,901.0	15.4	15.4	-90.38	-0.2	-29.9	29.9	-0.8	0.973 Level 1		
7,000.0	7,000.0	7,001.0	7,001.0	15.6	15.6	-90.38	-0.2	-29.9	29.9	-1.3	0.959 Level 1		
7,100.0	7,100.0	7,101.0	7,101.0	15.8	15.8	-90.38	-0.2	-29.9	29.9	-1.7	0.945 Level 1		
7,200.0	7,200.0	7,201.0	7,201.0	16.0	16.0	-90.38	-0.2	-29.9	29.9	-2.2	0.932 Level 1		
7,300.0	7,300.0	7,301.0	7,301.0	16.3	16.3	-90.38	-0.2	-29.9	29.9	-2.6	0.919 Level 1		
7,400.0	7,400.0	7,401.0	7,401.0	16.5	16.5	-90.38	-0.2	-29.9	29.9	-3.1	0.907 Level 1		
7,500.0	7,500.0	7,501.0	7,501.0	16.7	16.7	-90.38	-0.2	-29.9	29.9	-3.5	0.895 Level 1		
7,600.0	7,600.0	7,601.0	7,601.0	16.9	16.9	-90.38	-0.2	-29.9	29.9	-4.0	0.883 Level 1		
7,700.0	7,700.0	7,701.0	7,701.0	17.2	17.2	-90.38	-0.2	-29.9	29.9	-4.4	0.871 Level 1		
7,800.0	7,800.0	7,801.0	7,801.0	17.4	17.4	-90.38	-0.2	-29.9	29.9	-4.9	0.860 Level 1		
7,900.0	7,900.0	7,901.0	7,901.0	17.6	17.6	-90.38	-0.2	-29.9	29.9	-5.3	0.849 Level 1		
8,000.0	8,000.0	8,001.0	8,001.0	17.8	17.8	-90.38	-0.2	-29.9	29.9	-5.8	0.838 Level 1		
8,100.0	8,100.0	8,101.0	8,101.0	18.1	18.1	-90.38	-0.2	-29.9	29.9	-6.2	0.828 Level 1		
8,200.0	8,200.0	8,201.0	8,201.0	18.3	18.3	-90.38	-0.2	-29.9	29.9	-6.7	0.818 Level 1		
8,300.0	8,300.0	8,301.0	8,301.0	18.5	18.5	-90.38	-0.2	-29.9	29.9	-7.1	0.808 Level 1		
8,400.0	8,400.0	8,401.0	8,401.0	18.7	18.7	-90.38	-0.2	-29.9	29.9	-7.6	0.798 Level 1		
8,500.0	8,500.0	8,501.0	8,501.0	19.0	19.0	-90.38	-0.2	-29.9	29.9	-8.0	0.789 Level 1		
8,600.0	8,600.0	8,601.0	8,601.0	19.2	19.2	-90.38	-0.2	-29.9	29.9	-8.5	0.779 Level 1		
8,700.0	8,700.0	8,701.0	8,701.0	19.4	19.4	-90.38	-0.2	-29.9	29.9	-8.9	0.770 Level 1		
8,800.0	8,800.0	8,801.0	8,801.0	19.6	19.6	-90.38	-0.2	-29.9	29.9	-9.4	0.761 Level 1		
8,900.0	8,900.0	8,901.0	8,901.0	19.9	19.9	-90.38	-0.2	-29.9	29.9	-9.8	0.753 Level 1		
9,000.0	9,000.0	9,001.0	9,001.0	20.1	20.1	-90.38	-0.2	-29.9	29.9	-10.3	0.744 Level 1		
9,100.0	9,100.0	9,101.0	9,101.0	20.3	20.3	-90.38	-0.2	-29.9	29.9	-10.7	0.736 Level 1		
9,200.0	9,200.0	9,201.0	9,201.0	20.5	20.5	-90.38	-0.2	-29.9	29.9	-11.2	0.728 Level 1		
9,300.0	9,300.0	9,301.0	9,301.0	20.8	20.8	-90.38	-0.2	-29.9	29.9	-11.6	0.720 Level 1		
9,400.0	9,400.0	9,401.0	9,401.0	21.0	21.0	-90.38	-0.2	-29.9	29.9	-12.1	0.713 Level 1		
9,500.0	9,500.0	9,501.0	9,501.0	21.2	21.2	-90.38	-0.2	-29.9	29.9	-12.5	0.705 Level 1		
9,600.0	9,600.0	9,601.0	9,601.0	21.4	21.4	-90.38	-0.2	-29.9	29.9	-13.0	0.698 Level 1		
9,700.0	9,700.0	9,701.0	9,701.0	21.7	21.7	-90.38	-0.2	-29.9	29.9	-13.4	0.690 Level 1		
9,800.0	9,800.0	9,801.0	9,801.0	21.9	21.9	-90.38	-0.2	-29.9	29.9	-13.9	0.683 Level 1		
9,902.5	9,902.5	9,903.5	9,903.5	22.1	22.1	-90.38	-0.2	-29.9	29.9	-14.3	0.676 Level 1		
9,910.4	9,910.4	9,911.4	9,911.4	22.1	22.1	-90.00	-0.2	-29.9	29.9	-14.4	0.676 Level 1, CC		
9,925.0	9,925.0	9,926.0	9,926.0	22.2	22.2	-90.89	-0.2	-29.9	29.9	-14.4	0.675 Level 1, SF		
9,950.0	9,949.9	9,950.9	9,950.9	22.2	22.2	-94.37	-0.2	-29.9	30.0	-14.4	0.675 Level 1, ES		
9,975.0	9,974.7	9,975.7	9,975.7	22.3	22.3	-100.17	-0.2	-29.9	30.4	-14.1	0.682 Level 1		

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



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squires Federal Com #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squires Federal Com #7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
Survey Program: 0-MWD default												Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	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	
10,000.0	9,999.3	10,000.3	10,000.3	22.3	22.3	-107.89	-0.2	-29.9	31.5	-13.1	0.706	Level 1	
10,025.0	10,023.7	10,024.7	10,024.7	22.4	22.4	-116.72	-0.2	-29.9	33.7	-10.8	0.758	Level 1	
10,050.0	10,047.7	10,048.7	10,048.7	22.4	22.4	-125.68	-0.2	-29.9	37.4	-6.7	0.848	Level 1	
10,075.0	10,071.3	10,072.3	10,072.3	22.5	22.5	-133.90	-0.2	-29.9	42.9	-0.7	0.983	Level 1	
10,100.0	10,094.4	10,095.4	10,095.4	22.5	22.5	-140.92	-0.2	-29.9	50.1	7.2	1.168	Level 2	
10,125.0	10,117.0	10,118.0	10,118.0	22.6	22.6	-146.65	-0.2	-29.9	59.0	17.0	1.405	Level 3	
10,150.0	10,139.1	10,140.1	10,140.1	22.6	22.6	-151.22	-0.2	-29.9	69.4	28.5	1.696		
10,175.0	10,160.4	10,161.4	10,161.4	22.7	22.7	-154.83	-0.2	-29.9	81.3	41.5	2.045		
10,200.0	10,181.1	10,182.1	10,182.1	22.7	22.7	-157.67	-0.2	-29.9	94.5	56.0	2.454		
10,225.0	10,201.0	10,202.0	10,202.0	22.8	22.8	-159.91	-0.2	-29.9	109.0	71.8	2.931		
10,250.0	10,220.1	10,221.1	10,221.1	22.9	22.8	-161.67	-0.2	-29.9	124.5	88.8	3.483		
10,275.0	10,238.3	10,239.3	10,239.3	22.9	22.9	-163.05	-0.2	-29.9	141.2	107.0	4.121		
10,300.0	10,255.6	10,256.6	10,256.6	23.0	22.9	-164.11	-0.2	-29.9	158.9	126.2	4.857		
10,325.0	10,272.0	10,273.0	10,273.0	23.1	22.9	-164.90	-0.2	-29.9	177.5	146.4	5.707		
10,350.0	10,287.3	10,288.3	10,288.3	23.1	23.0	-165.46	-0.2	-29.9	197.0	167.6	6.687		
10,375.0	10,301.6	10,302.6	10,302.6	23.2	23.0	-165.80	-0.2	-29.9	217.3	189.5	7.820		
10,400.0	10,314.7	10,315.7	10,315.7	23.3	23.0	-165.93	-0.2	-29.9	238.4	212.3	9.125		
10,425.0	10,326.8	10,327.8	10,327.8	23.4	23.1	-165.84	-0.2	-29.9	260.1	235.6	10.620		
10,450.0	10,337.7	10,338.7	10,338.7	23.5	23.1	-165.50	-0.2	-29.9	282.5	259.5	12.308		
10,475.0	10,347.3	10,348.3	10,348.3	23.6	23.1	-164.85	-0.2	-29.9	305.4	283.8	14.152		
10,500.0	10,355.8	10,356.8	10,356.8	23.7	23.1	-163.79	-0.2	-29.9	328.8	308.3	16.031		
10,525.0	10,363.0	10,364.0	10,364.0	23.8	23.1	-162.13	-0.2	-29.9	352.7	332.7	17.670		
10,550.0	10,369.0	10,370.0	10,370.0	24.0	23.2	-159.51	-0.2	-29.9	376.9	356.6	18.574		
10,575.0	10,373.7	10,374.7	10,374.7	24.1	23.2	-155.19	-0.2	-29.9	401.4	379.2	18.118		
10,600.0	10,377.1	10,378.1	10,378.1	24.2	23.2	-147.34	-0.2	-29.9	426.1	399.3	15.913		
10,625.0	10,379.2	10,380.2	10,380.2	24.4	23.2	-130.90	-0.2	-29.9	450.9	414.5	12.373		
10,650.0	10,380.0	10,381.0	10,381.0	24.5	23.2	-94.75	-0.2	-29.9	475.8	428.0	9.956		
10,655.5	10,380.0	10,381.0	10,381.0	24.5	23.2	-84.25	-0.2	-29.9	481.3	433.5	10.075		
10,700.0	10,379.7	10,380.7	10,380.7	24.8	23.2	-83.72	-0.2	-29.9	525.7	477.7	10.944		
10,800.0	10,379.0	10,380.0	10,380.0	25.5	23.2	-82.53	-0.2	-29.9	625.6	576.9	12.846		
10,900.0	10,378.4	10,379.4	10,379.4	26.4	23.2	-81.36	-0.2	-29.9	725.5	676.1	14.672		
11,000.0	10,377.8	10,378.8	10,378.8	27.3	23.2	-80.19	-0.2	-29.9	825.4	775.2	16.421		
11,100.0	10,377.2	11,951.6	11,221.4	28.3	29.9	-178.16	931.4	-35.4	843.7	829.6	59.576		
11,200.0	10,376.5	12,051.6	11,220.6	29.4	30.9	-178.18	1,031.4	-36.0	843.6	828.1	54.641		
11,300.0	10,375.9	12,151.6	11,219.9	30.5	32.0	-178.20	1,131.4	-36.6	843.4	826.6	50.364		
11,400.0	10,375.3	12,251.6	11,219.1	31.7	33.2	-178.22	1,231.4	-37.1	843.2	825.1	46.642		
11,500.0	10,374.7	12,351.6	11,218.3	33.0	34.4	-178.24	1,331.3	-37.7	843.1	823.6	43.388		
11,600.0	10,374.0	12,451.6	11,217.5	34.3	35.7	-178.26	1,431.3	-38.3	842.9	822.1	40.526		
11,700.0	10,373.4	12,551.6	11,216.7	35.7	37.0	-178.28	1,531.3	-38.9	842.7	820.5	37.996		
11,800.0	10,372.8	12,651.6	11,215.9	37.1	38.4	-178.30	1,631.3	-39.5	842.6	819.0	35.746		
11,900.0	10,372.2	12,751.6	11,215.2	38.5	39.8	-178.32	1,731.3	-40.1	842.4	817.4	33.735		
12,000.0	10,371.5	12,851.6	11,214.4	40.0	41.2	-178.34	1,831.3	-40.7	842.2	815.9	31.929		
12,100.0	10,370.9	12,951.6	11,213.6	41.5	42.7	-178.36	1,931.3	-41.3	842.1	814.3	30.298		
12,200.0	10,370.3	13,051.6	11,212.8	43.0	44.1	-178.38	2,031.3	-41.9	841.9	812.7	28.821		
12,300.0	10,369.6	13,151.6	11,212.0	44.6	45.7	-178.40	2,131.3	-42.4	841.7	811.1	27.476		
12,400.0	10,369.0	13,251.6	11,211.2	46.2	47.2	-178.42	2,231.3	-43.0	841.6	809.5	26.248		
12,500.0	10,368.4	13,351.6	11,210.5	47.7	48.7	-178.44	2,331.3	-43.6	841.4	807.9	25.122		
12,600.0	10,367.8	13,451.6	11,209.7	49.3	50.3	-178.46	2,431.3	-44.2	841.2	806.3	24.086		
12,700.0	10,367.1	13,551.6	11,208.9	51.0	51.9	-178.48	2,531.3	-44.8	841.1	804.7	23.130		
12,800.0	10,366.5	13,651.6	11,208.1	52.6	53.5	-178.50	2,631.3	-45.4	840.9	803.1	22.245		
12,900.0	10,365.9	13,751.6	11,207.3	54.2	55.1	-178.52	2,731.3	-46.0	840.7	801.5	21.424		
13,000.0	10,365.3	13,851.6	11,206.5	55.9	56.8	-178.54	2,831.3	-46.6	840.6	799.9	20.660		

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 #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design: Sec 27, T22S, R34E - Squints Federal Com #3H - Wellbore #1 - Design #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD, default												Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning	
13,100.0	10,364.6	13,951.6	11,205.7	57.6	58.4	-178.56	2,931.3	-47.2	840.4	798.3	19.948		
13,200.0	10,364.0	14,051.6	11,205.0	59.2	60.1	-178.58	3,031.3	-47.7	840.2	796.7	19.283		
13,300.0	10,363.4	14,151.6	11,204.2	60.9	61.7	-178.60	3,131.3	-48.3	840.1	795.1	18.659		
13,400.0	10,362.7	14,251.6	11,203.4	62.6	63.4	-178.62	3,231.2	-48.9	839.9	793.5	18.074		
13,500.0	10,362.1	14,351.6	11,202.6	64.3	65.1	-178.64	3,331.2	-49.5	839.8	791.8	17.524		
13,600.0	10,361.5	14,451.6	11,201.8	66.0	66.7	-178.66	3,431.2	-50.1	839.6	790.2	17.006		
13,700.0	10,360.9	14,551.6	11,201.0	67.7	68.4	-178.68	3,531.2	-50.7	839.4	788.6	16.517		
13,800.0	10,360.2	14,651.6	11,200.3	69.4	70.1	-178.70	3,631.2	-51.3	839.3	787.0	16.056		
13,900.0	10,359.6	14,751.6	11,199.5	71.2	71.8	-178.72	3,731.2	-51.9	839.1	785.4	15.618		
14,000.0	10,359.0	14,851.6	11,198.7	72.9	73.6	-178.74	3,831.2	-52.4	838.9	783.8	15.204		
14,100.0	10,358.4	14,951.6	11,197.9	74.6	75.3	-178.76	3,931.2	-53.0	838.8	782.1	14.811		
14,200.0	10,357.7	15,051.6	11,197.1	76.4	77.0	-178.78	4,031.2	-53.6	838.6	780.5	14.437		
14,300.0	10,357.1	15,151.6	11,196.3	78.1	78.7	-178.80	4,131.2	-54.2	838.4	778.9	14.082		
14,400.0	10,356.5	15,251.6	11,195.6	79.8	80.5	-178.82	4,231.2	-54.8	838.3	777.3	13.743		
14,500.0	10,355.8	15,351.6	11,194.8	81.6	82.2	-178.84	4,331.2	-55.4	838.1	775.7	13.420		
14,600.0	10,355.2	15,451.6	11,194.0	83.3	83.9	-178.86	4,431.2	-56.0	838.0	774.1	13.112		
14,700.0	10,354.6	15,551.6	11,193.2	85.1	85.7	-178.88	4,531.2	-56.6	837.8	772.4	12.817		
14,800.0	10,354.0	15,651.6	11,192.4	86.9	87.4	-178.90	4,631.2	-57.2	837.6	770.8	12.535		
14,900.0	10,353.3	15,751.6	11,191.6	88.6	89.2	-178.92	4,731.2	-57.7	837.5	769.2	12.265		
15,000.0	10,352.7	15,851.6	11,190.9	90.4	90.9	-178.94	4,831.2	-58.3	837.3	767.6	12.007		
15,100.0	10,352.1	15,951.6	11,190.1	92.1	92.7	-178.96	4,931.2	-58.9	837.1	766.0	11.759		
15,200.0	10,351.5	16,051.6	11,189.3	93.9	94.4	-178.98	5,031.2	-59.5	837.0	764.3	11.520		
15,300.0	10,350.8	16,151.6	11,188.5	95.7	96.2	-179.00	5,131.1	-60.1	836.8	762.7	11.291		
15,400.0	10,350.2	16,251.6	11,187.7	97.4	97.9	-179.02	5,231.1	-60.7	836.7	761.1	11.071		
15,500.0	10,349.6	16,351.6	11,186.9	99.2	99.7	-179.04	5,331.1	-61.3	836.5	759.5	10.860		
15,600.0	10,349.0	16,451.6	11,186.1	101.0	101.5	-179.06	5,431.1	-61.9	836.3	757.8	10.656		
15,700.0	10,348.3	16,551.6	11,185.4	102.8	103.2	-179.08	5,531.1	-62.5	836.2	756.2	10.459		
15,800.0	10,347.7	16,651.6	11,184.6	104.5	105.0	-179.10	5,631.1	-63.0	836.0	754.6	10.270		
15,900.0	10,347.1	16,751.6	11,183.8	106.3	106.8	-179.12	5,731.1	-63.6	835.9	753.0	10.087		
16,000.0	10,346.4	16,851.6	11,183.0	108.1	108.6	-179.14	5,831.1	-64.2	835.7	751.4	9.910		
16,100.0	10,345.8	16,951.6	11,182.2	109.9	110.3	-179.16	5,931.1	-64.8	835.5	749.7	9.740		
16,200.0	10,345.2	17,051.6	11,181.4	111.7	112.1	-179.18	6,031.1	-65.4	835.4	748.1	9.575		
16,300.0	10,344.6	17,151.6	11,180.7	113.5	113.9	-179.20	6,131.1	-66.0	835.2	746.5	9.416		
16,400.0	10,343.9	17,251.6	11,179.9	115.2	115.7	-179.22	6,231.1	-66.6	835.0	744.9	9.261		
16,500.0	10,343.3	17,351.6	11,179.1	117.0	117.5	-179.24	6,331.1	-67.2	834.9	743.3	9.112		
16,600.0	10,342.7	17,451.6	11,178.3	118.8	119.2	-179.26	6,431.1	-67.8	834.7	741.6	8.967		
16,700.0	10,342.1	17,551.6	11,177.5	120.6	121.0	-179.28	6,531.1	-68.3	834.6	740.0	8.827		
16,800.0	10,341.4	17,651.6	11,176.7	122.4	122.8	-179.30	6,631.1	-68.9	834.4	738.4	8.691		
16,900.0	10,340.8	17,751.6	11,176.0	124.2	124.6	-179.32	6,731.1	-69.5	834.2	736.8	8.559		
17,000.0	10,340.2	17,851.6	11,175.2	126.0	126.4	-179.34	6,831.1	-70.1	834.1	735.1	8.431		
17,100.0	10,339.5	17,951.6	11,174.4	127.8	128.2	-179.36	6,931.0	-70.7	833.9	733.5	8.307		
17,200.0	10,338.9	18,051.6	11,173.6	129.6	130.0	-179.38	7,031.0	-71.3	833.8	731.9	8.186		
17,300.0	10,338.3	18,151.6	11,172.8	131.4	131.7	-179.40	7,131.0	-71.9	833.6	730.3	8.069		
17,400.0	10,337.7	18,251.6	11,172.0	133.2	133.5	-179.42	7,231.0	-72.5	833.4	728.7	7.954		
17,500.0	10,337.0	18,351.6	11,171.3	135.0	135.3	-179.45	7,331.0	-73.0	833.3	727.0	7.844		
17,600.0	10,336.4	18,451.6	11,170.5	136.8	137.1	-179.47	7,431.0	-73.6	833.1	725.4	7.736		
17,700.0	10,335.8	18,551.6	11,169.7	138.6	138.9	-179.49	7,531.0	-74.2	833.0	723.8	7.631		
17,800.0	10,335.2	18,651.6	11,168.9	140.4	140.7	-179.51	7,631.0	-74.8	832.8	722.2	7.528		
17,900.0	10,334.5	18,751.6	11,168.1	142.2	142.5	-179.53	7,731.0	-75.4	832.6	720.6	7.429		
18,000.0	10,333.9	18,851.6	11,167.3	144.0	144.3	-179.55	7,831.0	-76.0	832.5	718.9	7.332		
18,100.0	10,333.3	18,951.6	11,166.5	145.8	146.1	-179.57	7,931.0	-76.6	832.3	717.3	7.237		
18,200.0	10,332.6	19,051.6	11,165.8	147.6	147.9	-179.59	8,031.0	-77.2	832.2	715.7	7.145		

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 #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
Sec 27, T22S, R34E - Squints Federal Com #3H - Wellbore #1 - Design #1												Offset Well Error:	0.0 usft
Survey Program: 0-MWD default													
Reference Measured Depth (usft)	Vertical Depth (usft)	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	10,332.0	19,151.6	11,165.0	149.4	149.7	-179.61	8,131.0	-77.8	832.0	714.1	7.055		
18,400.0	10,331.4	19,251.6	11,164.2	151.2	151.5	-179.63	8,231.0	-78.3	831.8	712.4	6.967		
18,500.0	10,330.8	19,351.6	11,163.4	153.0	153.3	-179.65	8,331.0	-78.9	831.7	710.8	6.881		
18,600.0	10,330.1	19,451.6	11,162.6	154.8	155.1	-179.67	8,431.0	-79.5	831.5	709.2	6.798		
18,700.0	10,329.5	19,551.6	11,161.8	156.6	156.9	-179.69	8,531.0	-80.1	831.4	707.6	6.716		
18,800.0	10,328.9	19,651.6	11,161.1	158.4	158.7	-179.71	8,631.0	-80.7	831.2	706.0	6.636		
18,900.0	10,328.3	19,751.6	11,160.3	160.2	160.5	-179.73	8,731.0	-81.3	831.1	704.3	6.559		
19,000.0	10,327.6	19,851.6	11,159.5	162.0	162.3	-179.75	8,830.9	-81.9	830.9	702.7	6.482		
19,100.0	10,327.0	19,951.6	11,158.7	163.8	164.1	-179.77	8,930.9	-82.5	830.7	701.1	6.408		
19,200.0	10,326.4	20,051.6	11,157.9	165.6	165.9	-179.79	9,030.9	-83.1	830.6	699.5	6.335		
19,300.0	10,325.8	20,151.6	11,157.1	167.4	167.7	-179.81	9,130.9	-83.6	830.4	697.9	6.264		
19,400.0	10,325.1	20,251.6	11,156.4	169.2	169.5	-179.83	9,230.9	-84.2	830.3	696.2	6.195		
19,500.0	10,324.5	20,351.6	11,155.6	171.0	171.3	-179.85	9,330.9	-84.8	830.1	694.6	6.126		
19,600.0	10,323.9	20,451.6	11,154.8	172.8	173.1	-179.87	9,430.9	-85.4	829.9	693.0	6.060		
19,700.0	10,323.2	20,551.6	11,154.0	174.6	174.9	-179.90	9,530.9	-86.0	829.8	691.4	5.995		
19,800.0	10,322.6	20,651.6	11,153.2	176.4	176.7	-179.92	9,630.9	-86.6	829.6	689.7	5.931		
19,900.0	10,322.0	20,751.6	11,152.4	178.3	178.5	-179.94	9,730.9	-87.2	829.5	688.1	5.868		
20,000.0	10,321.4	20,851.6	11,151.7	180.1	180.3	-179.96	9,830.9	-87.8	829.3	686.5	5.807		
20,100.0	10,320.7	20,951.6	11,150.9	181.9	182.1	-179.98	9,930.9	-88.3	829.2	684.9	5.747		
20,200.0	10,320.1	21,051.6	11,150.1	183.7	183.9	-180.00	10,030.9	-88.9	829.0	683.3	5.688		
20,212.4	10,320.0	21,062.7	11,150.0	183.9	184.1	180.00	10,042.0	-89.0	829.0	683.1	5.681		
20,217.1	10,320.0	21,062.7	11,150.0	184.0	184.1	180.00	10,042.0	-89.0	829.0	683.0	5.680		



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	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	1.0	1.0	0.0	0.0	-90.46	-10.8	-1,349.7	1,349.7			
100.0	100.0	101.0	101.0	0.1	0.1	-90.46	-10.8	-1,349.7	1,349.7	1,349.6	8,578.707	
200.0	200.0	201.0	201.0	0.3	0.3	-90.46	-10.8	-1,349.7	1,349.7	1,349.1	2,224.111	
300.0	300.0	301.0	301.0	0.5	0.5	-90.46	-10.8	-1,349.7	1,349.7	1,348.7	1,277.681	
400.0	400.0	401.0	401.0	0.8	0.8	-90.46	-10.8	-1,349.7	1,349.7	1,348.2	896.284	
500.0	500.0	501.0	501.0	1.0	1.0	-90.46	-10.8	-1,349.7	1,349.7	1,347.8	690.242	
600.0	600.0	601.0	601.0	1.2	1.2	-90.46	-10.8	-1,349.7	1,349.7	1,347.3	561.225	
700.0	700.0	701.0	701.0	1.4	1.4	-90.46	-10.8	-1,349.7	1,349.7	1,346.9	472.843	
800.0	800.0	801.0	801.0	1.7	1.7	-90.46	-10.8	-1,349.7	1,349.7	1,346.4	408.510	
900.0	900.0	901.0	901.0	1.9	1.9	-90.46	-10.8	-1,349.7	1,349.7	1,346.0	359.587	
1,000.0	1,000.0	1,001.0	1,001.0	2.1	2.1	-90.46	-10.8	-1,349.7	1,349.7	1,345.5	321.128	
1,100.0	1,100.0	1,101.0	1,101.0	2.3	2.3	-90.46	-10.8	-1,349.7	1,349.7	1,345.1	290.102	
1,200.0	1,200.0	1,201.0	1,201.0	2.5	2.6	-90.46	-10.8	-1,349.7	1,349.7	1,344.6	264.542	
1,300.0	1,300.0	1,301.0	1,301.0	2.8	2.8	-90.46	-10.8	-1,349.7	1,349.7	1,344.2	243.122	
1,400.0	1,400.0	1,401.0	1,401.0	3.0	3.0	-90.46	-10.8	-1,349.7	1,349.7	1,343.7	224.910	
1,500.0	1,500.0	1,501.0	1,501.0	3.2	3.2	-90.46	-10.8	-1,349.7	1,349.7	1,343.3	209.237	
1,600.0	1,600.0	1,601.0	1,601.0	3.4	3.5	-90.46	-10.8	-1,349.7	1,349.7	1,342.8	195.606	
1,700.0	1,700.0	1,701.0	1,701.0	3.7	3.7	-90.46	-10.8	-1,349.7	1,349.7	1,342.4	183.642	
1,800.0	1,800.0	1,801.0	1,801.0	3.9	3.9	-90.46	-10.8	-1,349.7	1,349.7	1,341.9	173.058	
1,900.0	1,900.0	1,901.0	1,901.0	4.1	4.1	-90.46	-10.8	-1,349.7	1,349.7	1,341.5	163.627	
2,000.0	2,000.0	2,001.0	2,001.0	4.3	4.4	-90.46	-10.8	-1,349.7	1,349.7	1,341.0	155.171	
2,100.0	2,100.0	2,101.0	2,101.0	4.6	4.6	-90.46	-10.8	-1,349.7	1,349.7	1,340.6	147.546	
2,200.0	2,200.0	2,201.0	2,201.0	4.8	4.8	-90.46	-10.8	-1,349.7	1,349.7	1,340.1	140.635	
2,300.0	2,300.0	2,301.0	2,301.0	5.0	5.0	-90.46	-10.8	-1,349.7	1,349.7	1,339.7	134.342	
2,400.0	2,400.0	2,401.0	2,401.0	5.2	5.2	-90.46	-10.8	-1,349.7	1,349.7	1,339.2	128.589	
2,500.0	2,500.0	2,501.0	2,501.0	5.5	5.5	-90.46	-10.8	-1,349.7	1,349.7	1,338.8	123.308	
2,600.0	2,600.0	2,601.0	2,601.0	5.7	5.7	-90.46	-10.8	-1,349.7	1,349.7	1,338.3	118.444	
2,700.0	2,700.0	2,701.0	2,701.0	5.9	5.9	-90.46	-10.8	-1,349.7	1,349.7	1,337.9	113.949	
2,800.0	2,800.0	2,801.0	2,801.0	6.1	6.1	-90.46	-10.8	-1,349.7	1,349.7	1,337.4	109.783	
2,900.0	2,900.0	2,901.0	2,901.0	6.4	6.4	-90.46	-10.8	-1,349.7	1,349.7	1,337.0	105.910	
3,000.0	3,000.0	3,001.0	3,001.0	6.6	6.6	-90.46	-10.8	-1,349.7	1,349.7	1,336.5	102.302	
3,100.0	3,100.0	3,101.0	3,101.0	6.8	6.8	-90.46	-10.8	-1,349.7	1,349.7	1,336.1	98.931	
3,200.0	3,200.0	3,201.0	3,201.0	7.0	7.0	-90.46	-10.8	-1,349.7	1,349.7	1,335.7	95.775	
3,300.0	3,300.0	3,301.0	3,301.0	7.3	7.3	-90.46	-10.8	-1,349.7	1,349.7	1,335.2	92.815	
3,400.0	3,400.0	3,401.0	3,401.0	7.5	7.5	-90.46	-10.8	-1,349.7	1,349.7	1,334.8	90.032	
3,500.0	3,500.0	3,501.0	3,501.0	7.7	7.7	-90.46	-10.8	-1,349.7	1,349.7	1,334.3	87.411	
3,600.0	3,600.0	3,601.0	3,601.0	7.9	7.9	-90.46	-10.8	-1,349.7	1,349.7	1,333.9	84.938	
3,700.0	3,700.0	3,701.0	3,701.0	8.2	8.2	-90.46	-10.8	-1,349.7	1,349.7	1,333.4	82.601	
3,800.0	3,800.0	3,801.0	3,801.0	8.4	8.4	-90.46	-10.8	-1,349.7	1,349.7	1,333.0	80.390	
3,900.0	3,900.0	3,901.0	3,901.0	8.6	8.6	-90.46	-10.8	-1,349.7	1,349.7	1,332.5	78.293	
4,000.0	4,000.0	4,001.0	4,001.0	8.8	8.8	-90.46	-10.8	-1,349.7	1,349.7	1,332.1	76.304	
4,100.0	4,100.0	4,101.0	4,101.0	9.1	9.1	-90.46	-10.8	-1,349.7	1,349.7	1,331.6	74.413	
4,200.0	4,200.0	4,201.0	4,201.0	9.3	9.3	-90.46	-10.8	-1,349.7	1,349.7	1,331.2	72.613	
4,300.0	4,300.0	4,301.0	4,301.0	9.5	9.5	-90.46	-10.8	-1,349.7	1,349.7	1,330.7	70.899	
4,400.0	4,400.0	4,401.0	4,401.0	9.7	9.7	-90.46	-10.8	-1,349.7	1,349.7	1,330.3	69.263	
4,500.0	4,500.0	4,501.0	4,501.0	10.0	10.0	-90.46	-10.8	-1,349.7	1,349.7	1,329.8	67.701	
4,600.0	4,600.0	4,601.0	4,601.0	10.2	10.2	-90.46	-10.8	-1,349.7	1,349.7	1,329.4	66.208	
4,700.0	4,700.0	4,701.0	4,701.0	10.4	10.4	-90.46	-10.8	-1,349.7	1,349.7	1,328.9	64.780	
4,800.0	4,800.0	4,801.0	4,801.0	10.6	10.6	-90.46	-10.8	-1,349.7	1,349.7	1,328.5	63.412	
4,900.0	4,900.0	4,901.0	4,901.0	10.9	10.9	-90.46	-10.8	-1,349.7	1,349.7	1,328.0	62.100	
5,000.0	5,000.0	5,001.0	5,001.0	11.1	11.1	-90.46	-10.8	-1,349.7	1,349.7	1,327.6	60.842	
5,100.0	5,100.0	5,101.0	5,101.0	11.3	11.3	-90.46	-10.8	-1,349.7	1,349.7	1,327.1	59.634	

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 #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
Sec 27, T22S, R34E - Squints Federal Com #4H - Wellbore #1 - Design #1												Offset Well Error:	0.0 usft
Survey Program: 0-MWD default													
Reference Measured Depth (usft)	Vertical Depth (usft)	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	5,201.0	5,201.0	11.5	11.5	-90.46	-10.8	-1,349.7	1,349.7	1,326.7	58.472		
5,300.0	5,300.0	5,301.0	5,301.0	11.8	11.8	-90.46	-10.8	-1,349.7	1,349.7	1,326.2	57.355		
5,400.0	5,400.0	5,401.0	5,401.0	12.0	12.0	-90.46	-10.8	-1,349.7	1,349.7	1,325.8	56.280		
5,500.0	5,500.0	5,501.0	5,501.0	12.2	12.2	-90.46	-10.8	-1,349.7	1,349.7	1,325.3	55.245		
5,600.0	5,600.0	5,601.0	5,601.0	12.4	12.4	-90.46	-10.8	-1,349.7	1,349.7	1,324.9	54.247		
5,700.0	5,700.0	5,701.0	5,701.0	12.7	12.7	-90.46	-10.8	-1,349.7	1,349.7	1,324.4	53.284		
5,800.0	5,800.0	5,801.0	5,801.0	12.9	12.9	-90.46	-10.8	-1,349.7	1,349.7	1,324.0	52.355		
5,900.0	5,900.0	5,901.0	5,901.0	13.1	13.1	-90.46	-10.8	-1,349.7	1,349.7	1,323.5	51.458		
6,000.0	6,000.0	6,001.0	6,001.0	13.3	13.3	-90.46	-10.8	-1,349.7	1,349.7	1,323.1	50.591		
6,100.0	6,100.0	6,101.0	6,101.0	13.6	13.6	-90.46	-10.8	-1,349.7	1,349.7	1,322.6	49.752		
6,200.0	6,200.0	6,201.0	6,201.0	13.8	13.8	-90.46	-10.8	-1,349.7	1,349.7	1,322.2	48.941		
6,300.0	6,300.0	6,301.0	6,301.0	14.0	14.0	-90.46	-10.8	-1,349.7	1,349.7	1,321.7	48.156		
6,400.0	6,400.0	6,401.0	6,401.0	14.2	14.2	-90.46	-10.8	-1,349.7	1,349.7	1,321.3	47.396		
6,500.0	6,500.0	6,501.0	6,501.0	14.5	14.5	-90.46	-10.8	-1,349.7	1,349.7	1,320.8	46.660		
6,600.0	6,600.0	6,601.0	6,601.0	14.7	14.7	-90.46	-10.8	-1,349.7	1,349.7	1,320.4	45.946		
6,700.0	6,700.0	6,701.0	6,701.0	14.9	14.9	-90.46	-10.8	-1,349.7	1,349.7	1,319.9	45.253		
6,800.0	6,800.0	6,801.0	6,801.0	15.1	15.1	-90.46	-10.8	-1,349.7	1,349.7	1,319.5	44.581		
6,900.0	6,900.0	6,901.0	6,901.0	15.4	15.4	-90.46	-10.8	-1,349.7	1,349.7	1,319.0	43.929		
7,000.0	7,000.0	7,001.0	7,001.0	15.6	15.6	-90.46	-10.8	-1,349.7	1,349.7	1,318.6	43.296		
7,100.0	7,100.0	7,101.0	7,101.0	15.8	15.8	-90.46	-10.8	-1,349.7	1,349.7	1,318.1	42.680		
7,200.0	7,200.0	7,201.0	7,201.0	16.0	16.0	-90.46	-10.8	-1,349.7	1,349.7	1,317.7	42.082		
7,300.0	7,300.0	7,301.0	7,301.0	16.3	16.3	-90.46	-10.8	-1,349.7	1,349.7	1,317.2	41.500		
7,400.0	7,400.0	7,401.0	7,401.0	16.5	16.5	-90.46	-10.8	-1,349.7	1,349.7	1,316.8	40.935		
7,500.0	7,500.0	7,501.0	7,501.0	16.7	16.7	-90.46	-10.8	-1,349.7	1,349.7	1,316.3	40.384		
7,600.0	7,600.0	7,601.0	7,601.0	16.9	16.9	-90.46	-10.8	-1,349.7	1,349.7	1,315.9	39.848		
7,700.0	7,700.0	7,701.0	7,701.0	17.2	17.2	-90.46	-10.8	-1,349.7	1,349.7	1,315.4	39.326		
7,800.0	7,800.0	7,801.0	7,801.0	17.4	17.4	-90.46	-10.8	-1,349.7	1,349.7	1,315.0	38.818		
7,900.0	7,900.0	7,901.0	7,901.0	17.6	17.6	-90.46	-10.8	-1,349.7	1,349.7	1,314.5	38.322		
8,000.0	8,000.0	8,001.0	8,001.0	17.8	17.8	-90.46	-10.8	-1,349.7	1,349.7	1,314.1	37.839		
8,100.0	8,100.0	8,101.0	8,101.0	18.1	18.1	-90.46	-10.8	-1,349.7	1,349.7	1,313.6	37.368		
8,200.0	8,200.0	8,201.0	8,201.0	18.3	18.3	-90.46	-10.8	-1,349.7	1,349.7	1,313.2	36.909		
8,300.0	8,300.0	8,301.0	8,301.0	18.5	18.5	-90.46	-10.8	-1,349.7	1,349.7	1,312.7	36.461		
8,400.0	8,400.0	8,401.0	8,401.0	18.7	18.7	-90.46	-10.8	-1,349.7	1,349.7	1,312.3	36.023		
8,500.0	8,500.0	8,501.0	8,501.0	19.0	19.0	-90.46	-10.8	-1,349.7	1,349.7	1,311.8	35.596		
8,600.0	8,600.0	8,601.0	8,601.0	19.2	19.2	-90.46	-10.8	-1,349.7	1,349.7	1,311.4	35.179		
8,700.0	8,700.0	8,701.0	8,701.0	19.4	19.4	-90.46	-10.8	-1,349.7	1,349.7	1,310.9	34.772		
8,800.0	8,800.0	8,801.0	8,801.0	19.6	19.6	-90.46	-10.8	-1,349.7	1,349.7	1,310.5	34.374		
8,900.0	8,900.0	8,901.0	8,901.0	19.9	19.9	-90.46	-10.8	-1,349.7	1,349.7	1,310.0	33.985		
9,000.0	9,000.0	9,001.0	9,001.0	20.1	20.1	-90.46	-10.8	-1,349.7	1,349.7	1,309.6	33.604		
9,100.0	9,100.0	9,101.0	9,101.0	20.3	20.3	-90.46	-10.8	-1,349.7	1,349.7	1,309.1	33.232		
9,200.0	9,200.0	9,201.0	9,201.0	20.5	20.5	-90.46	-10.8	-1,349.7	1,349.7	1,308.7	32.869		
9,300.0	9,300.0	9,301.0	9,301.0	20.8	20.8	-90.46	-10.8	-1,349.7	1,349.7	1,308.2	32.513		
9,400.0	9,400.0	9,401.0	9,401.0	21.0	21.0	-90.46	-10.8	-1,349.7	1,349.7	1,307.8	32.164		
9,500.0	9,500.0	9,501.0	9,501.0	21.2	21.2	-90.46	-10.8	-1,349.7	1,349.7	1,307.3	31.824		
9,600.0	9,600.0	9,601.0	9,601.0	21.4	21.4	-90.46	-10.8	-1,349.7	1,349.7	1,306.9	31.490		
9,700.0	9,700.0	9,701.0	9,701.0	21.7	21.7	-90.46	-10.8	-1,349.7	1,349.7	1,306.4	31.163		
9,800.0	9,800.0	9,801.0	9,801.0	21.9	21.9	-90.46	-10.8	-1,349.7	1,349.7	1,306.0	30.843		
9,902.5	9,902.5	9,903.5	9,903.5	22.1	22.1	-90.46	-10.8	-1,349.7	1,349.7	1,305.5	30.521		
9,925.0	9,925.0	9,926.0	9,926.0	22.2	22.2	-89.97	-10.8	-1,349.7	1,349.7	1,305.4	30.452		
9,935.8	9,935.8	9,936.8	9,936.8	22.2	22.2	-90.00	-10.8	-1,349.7	1,349.7	1,305.4	30.419 CC		
9,950.0	9,949.9	9,950.9	9,950.9	22.2	22.2	-90.05	-10.8	-1,349.7	1,349.7	1,305.3	30.376		
9,975.0	9,974.7	9,975.7	9,975.7	22.3	22.3	-90.18	-10.8	-1,349.7	1,349.7	1,305.2	30.301		

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 #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design: Sec 27, T22S, R34E - Squints Federal Com #4H - Wellbore #1 - Design #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD default												Offset Well Error:	0.0 usft
Reference	Measured	Offset	Vertical	Semi Major Axis	Offset	Highside	Offset Wellbore Centre	Distance	Between	Between	Separation	Warning	
Depth	Depth	Depth	Depth	Reference	Offset	Toolface	+N/-S	+E/-W	Centres	Ellipses	Factor		
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	(usft)	(usft)	(usft)	(usft)			
10,000.0	9,999.3	10,000.3	10,000.3	22.3	22.3	-90.36	-10.8	-1,349.7	1,349.8	1,305.1	30.227		
10,025.0	10,023.7	10,024.7	10,024.7	22.4	22.4	-90.59	-10.8	-1,349.7	1,349.8	1,305.1	30.155		
10,050.0	10,047.7	10,048.7	10,048.7	22.4	22.4	-90.87	-10.8	-1,349.7	1,349.9	1,305.0	30.085		
10,075.0	10,071.3	10,072.3	10,072.3	22.5	22.5	-91.18	-10.8	-1,349.7	1,350.1	1,305.1	30.018		
10,100.0	10,094.4	10,095.4	10,095.4	22.5	22.5	-91.52	-10.8	-1,349.7	1,350.3	1,305.2	29.954		
10,125.0	10,117.0	10,118.0	10,118.0	22.6	22.6	-91.89	-10.8	-1,349.7	1,350.7	1,305.5	29.893		
10,150.0	10,139.1	10,140.1	10,140.1	22.6	22.6	-92.27	-10.8	-1,349.7	1,351.1	1,305.9	29.837		
10,175.0	10,160.4	10,161.4	10,161.4	22.7	22.7	-92.66	-10.8	-1,349.7	1,351.8	1,306.4	29.786		
10,200.0	10,181.1	10,182.1	10,182.1	22.7	22.7	-93.05	-10.8	-1,349.7	1,352.6	1,307.2	29.740		
10,225.0	10,201.0	10,202.0	10,202.0	22.8	22.8	-93.43	-10.8	-1,349.7	1,353.7	1,308.1	29.700		
10,250.0	10,220.1	10,221.1	10,221.1	22.9	22.8	-93.79	-10.8	-1,349.7	1,355.0	1,309.4	29.666		
10,275.0	10,238.3	10,239.3	10,239.3	22.9	22.9	-94.12	-10.8	-1,349.7	1,356.7	1,310.9	29.639		
10,300.0	10,255.6	10,256.6	10,256.6	23.0	22.9	-94.42	-10.8	-1,349.7	1,358.6	1,312.7	29.618		
10,325.0	10,272.0	10,273.0	10,273.0	23.1	22.9	-94.66	-10.8	-1,349.7	1,360.9	1,314.9	29.603		
10,350.0	10,287.3	10,288.3	10,288.3	23.1	23.0	-94.85	-10.8	-1,349.7	1,363.6	1,317.5	29.594		
10,375.0	10,301.6	10,302.6	10,302.6	23.2	23.0	-94.98	-10.8	-1,349.7	1,366.6	1,320.4	29.590		
10,400.0	10,314.7	10,315.7	10,315.7	23.3	23.0	-95.03	-10.8	-1,349.7	1,370.1	1,323.8	29.590		
10,425.0	10,326.8	10,327.8	10,327.8	23.4	23.1	-95.00	-10.8	-1,349.7	1,374.1	1,327.6	29.594		
10,450.0	10,337.7	10,338.7	10,338.7	23.5	23.1	-94.88	-10.8	-1,349.7	1,378.4	1,331.9	29.602		
10,475.0	10,347.3	10,348.3	10,348.3	23.6	23.1	-94.66	-10.8	-1,349.7	1,383.3	1,336.6	29.611		
10,500.0	10,355.8	10,356.8	10,356.8	23.7	23.1	-94.34	-10.8	-1,349.7	1,388.6	1,341.8	29.624		
10,525.0	10,363.0	10,364.0	10,364.0	23.8	23.1	-93.92	-10.8	-1,349.7	1,394.5	1,347.4	29.640		
10,550.0	10,369.0	10,370.0	10,370.0	24.0	23.2	-93.38	-10.8	-1,349.7	1,400.8	1,353.5	29.660		
10,575.0	10,373.7	10,374.7	10,374.7	24.1	23.2	-92.74	-10.8	-1,349.7	1,407.5	1,360.1	29.686		
10,600.0	10,377.1	10,378.1	10,378.1	24.2	23.2	-91.97	-10.8	-1,349.7	1,414.7	1,367.1	29.720		
10,625.0	10,379.2	10,380.2	10,380.2	24.4	23.2	-91.10	-10.8	-1,349.7	1,422.4	1,374.6	29.765		
10,650.0	10,380.0	10,381.0	10,381.0	24.5	23.2	-90.11	-10.8	-1,349.7	1,430.5	1,382.5	29.824		
10,655.5	10,380.0	10,381.0	10,381.0	24.5	23.2	-89.87	-10.8	-1,349.7	1,432.3	1,384.3	29.839		
10,700.0	10,379.7	10,380.7	10,380.7	24.8	23.2	-89.86	-10.8	-1,349.7	1,447.8	1,399.5	29.968		
10,800.0	10,379.0	10,380.0	10,380.0	25.5	23.2	-89.83	-10.8	-1,349.7	1,486.9	1,437.8	30.287		
10,900.0	10,378.4	11,623.3	11,106.5	26.4	27.8	-118.35	712.4	-1,354.0	1,531.2	1,483.3	31.934		
11,000.0	10,377.8	11,723.3	11,107.1	27.3	28.6	-118.40	812.4	-1,354.6	1,531.6	1,482.0	30.907		
11,100.0	10,377.2	11,823.3	11,107.8	28.3	29.6	-118.44	912.4	-1,355.1	1,531.9	1,480.6	29.852		
11,200.0	10,376.5	11,923.2	11,108.4	29.4	30.6	-118.49	1,012.4	-1,355.7	1,532.2	1,479.0	28.791		
11,300.0	10,375.9	12,023.2	11,109.0	30.5	31.7	-118.53	1,112.4	-1,356.3	1,532.6	1,477.3	27.739		
11,400.0	10,375.3	12,123.2	11,109.7	31.7	32.9	-118.58	1,212.4	-1,356.9	1,532.9	1,475.5	26.709		
11,500.0	10,374.7	12,223.2	11,110.3	33.0	34.1	-118.63	1,312.3	-1,357.5	1,533.3	1,473.6	25.710		
11,600.0	10,374.0	12,323.2	11,110.9	34.3	35.4	-118.67	1,412.3	-1,358.1	1,533.6	1,471.6	24.747		
11,700.0	10,373.4	12,423.2	11,111.5	35.7	36.7	-118.72	1,512.3	-1,358.7	1,533.9	1,469.6	23.826		
11,800.0	10,372.8	12,523.2	11,112.2	37.1	38.1	-118.77	1,612.3	-1,359.3	1,534.3	1,467.4	22.946		
11,900.0	10,372.2	12,623.2	11,112.8	38.5	39.5	-118.81	1,712.3	-1,359.9	1,534.6	1,465.2	22.110		
12,000.0	10,371.5	12,723.2	11,113.4	40.0	40.9	-118.86	1,812.3	-1,360.4	1,535.0	1,463.0	21.317		
12,100.0	10,370.9	12,823.2	11,114.0	41.5	42.4	-118.91	1,912.3	-1,361.0	1,535.3	1,460.7	20.565		
12,200.0	10,370.3	12,923.2	11,114.7	43.0	43.9	-118.95	2,012.3	-1,361.6	1,535.7	1,458.3	19.854		
12,300.0	10,369.6	13,023.2	11,115.3	44.6	45.4	-119.00	2,112.3	-1,362.2	1,536.0	1,455.9	19.181		
12,400.0	10,369.0	13,123.1	11,115.9	46.2	46.9	-119.04	2,212.2	-1,362.8	1,536.4	1,453.5	18.544		
12,500.0	10,368.4	13,223.1	11,116.6	47.7	48.5	-119.09	2,312.2	-1,363.4	1,536.7	1,451.1	17.943		
12,600.0	10,367.8	13,323.1	11,117.2	49.3	50.1	-119.14	2,412.2	-1,364.0	1,537.1	1,448.6	17.373		
12,700.0	10,367.1	13,423.1	11,117.8	51.0	51.6	-119.18	2,512.2	-1,364.6	1,537.4	1,446.1	16.835		
12,800.0	10,366.5	13,523.1	11,118.4	52.6	53.3	-119.23	2,612.2	-1,365.2	1,537.8	1,443.6	16.325		
12,900.0	10,365.9	13,623.1	11,119.1	54.2	54.9	-119.28	2,712.2	-1,365.8	1,538.1	1,441.0	15.842		
13,000.0	10,365.3	13,723.1	11,119.7	55.9	56.5	-119.32	2,812.2	-1,366.3	1,538.5	1,438.5	15.384		



HP
Anticollision Report



Company:	COG Operating, LLC	Local/Co-ordinate Reference:	Well Squints Federal Com #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design: Sec 27, T22S, R34E - Squints Federal Com #4H - Wellbore #1 - Design #1											Offset Site Error:	0.0 usft
Survey Program: 0-MWD default											Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	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
13,100.0	10,364.6	13,823.1	11,120.3	57.6	58.1	-119.37	2,912.2	-1,366.9	1,538.8	1,435.9	14.949	
13,200.0	10,364.0	13,923.1	11,121.0	59.2	59.8	-119.41	3,012.1	-1,367.5	1,539.2	1,433.3	14.537	
13,300.0	10,363.4	14,023.1	11,121.6	60.9	61.5	-119.46	3,112.1	-1,368.1	1,539.6	1,430.7	14.145	
13,400.0	10,362.7	14,123.1	11,122.2	62.6	63.1	-119.51	3,212.1	-1,368.7	1,539.9	1,428.1	13.772	
13,500.0	10,362.1	14,223.1	11,122.8	64.3	64.8	-119.55	3,312.1	-1,369.3	1,540.3	1,425.5	13.418	
13,600.0	10,361.5	14,323.0	11,123.5	66.0	66.5	-119.60	3,412.1	-1,369.9	1,540.6	1,422.9	13.080	
13,700.0	10,360.9	14,423.0	11,124.1	67.7	68.2	-119.64	3,512.1	-1,370.5	1,541.0	1,420.2	12.758	
13,800.0	10,360.2	14,523.0	11,124.7	69.4	69.9	-119.69	3,612.1	-1,371.1	1,541.4	1,417.6	12.450	
13,900.0	10,359.6	14,623.0	11,125.3	71.2	71.6	-119.74	3,712.1	-1,371.7	1,541.7	1,414.9	12.157	
14,000.0	10,359.0	14,723.0	11,126.0	72.9	73.3	-119.78	3,812.0	-1,372.2	1,542.1	1,412.3	11.877	
14,100.0	10,358.4	14,823.0	11,126.6	74.6	75.0	-119.83	3,912.0	-1,372.8	1,542.5	1,409.6	11.609	
14,200.0	10,357.7	14,923.0	11,127.2	76.4	76.8	-119.87	4,012.0	-1,373.4	1,542.8	1,406.9	11.352	
14,300.0	10,357.1	15,023.0	11,127.9	78.1	78.5	-119.92	4,112.0	-1,374.0	1,543.2	1,404.2	11.106	
14,400.0	10,356.5	15,123.0	11,128.5	79.8	80.2	-119.97	4,212.0	-1,374.6	1,543.6	1,401.6	10.871	
14,500.0	10,355.8	15,223.0	11,129.1	81.6	82.0	-120.01	4,312.0	-1,375.2	1,543.9	1,398.9	10.644	
14,600.0	10,355.2	15,323.0	11,129.7	83.3	83.7	-120.06	4,412.0	-1,375.8	1,544.3	1,396.2	10.428	
14,700.0	10,354.6	15,423.0	11,130.4	85.1	85.4	-120.10	4,512.0	-1,376.4	1,544.7	1,393.5	10.219	
14,800.0	10,354.0	15,522.9	11,131.0	86.9	87.2	-120.15	4,612.0	-1,377.0	1,545.1	1,390.8	10.019	
14,900.0	10,353.3	15,622.9	11,131.6	88.6	88.9	-120.20	4,711.9	-1,377.5	1,545.4	1,388.2	9.826	
15,000.0	10,352.7	15,722.9	11,132.3	90.4	90.7	-120.24	4,811.9	-1,378.1	1,545.8	1,385.5	9.641	
15,100.0	10,352.1	15,822.9	11,132.9	92.1	92.5	-120.29	4,911.9	-1,378.7	1,546.2	1,382.8	9.462	
15,200.0	10,351.5	15,922.9	11,133.5	93.9	94.2	-120.33	5,011.9	-1,379.3	1,546.6	1,380.1	9.290	
15,300.0	10,350.8	16,022.9	11,134.1	95.7	96.0	-120.38	5,111.9	-1,379.9	1,546.9	1,377.4	9.124	
15,400.0	10,350.2	16,122.9	11,134.8	97.4	97.7	-120.42	5,211.9	-1,380.5	1,547.3	1,374.7	8.964	
15,500.0	10,349.6	16,222.9	11,135.4	99.2	99.5	-120.47	5,311.9	-1,381.1	1,547.7	1,372.0	8.809	
15,600.0	10,349.0	16,322.9	11,136.0	101.0	101.3	-120.51	5,411.9	-1,381.7	1,548.1	1,369.3	8.660	
15,700.0	10,348.3	16,422.9	11,136.6	102.8	103.0	-120.56	5,511.8	-1,382.3	1,548.5	1,366.6	8.515	
15,800.0	10,347.7	16,522.9	11,137.3	104.5	104.8	-120.61	5,611.8	-1,382.9	1,548.8	1,363.9	8.376	
15,900.0	10,347.1	16,622.9	11,137.9	106.3	106.6	-120.65	5,711.8	-1,383.4	1,549.2	1,361.2	8.241	
16,000.0	10,346.4	16,722.8	11,138.5	108.1	108.4	-120.70	5,811.8	-1,384.0	1,549.6	1,358.5	8.110	
16,100.0	10,345.8	16,822.8	11,139.2	109.9	110.1	-120.74	5,911.8	-1,384.6	1,550.0	1,355.8	7.984	
16,200.0	10,345.2	16,922.8	11,139.8	111.7	111.9	-120.79	6,011.8	-1,385.2	1,550.4	1,353.2	7.861	
16,300.0	10,344.6	17,022.8	11,140.4	113.5	113.7	-120.83	6,111.8	-1,385.8	1,550.8	1,350.5	7.742	
16,400.0	10,343.9	17,122.8	11,141.0	115.2	115.5	-120.88	6,211.8	-1,386.4	1,551.2	1,347.8	7.627	
16,500.0	10,343.3	17,222.8	11,141.7	117.0	117.2	-120.92	6,311.7	-1,387.0	1,551.5	1,345.1	7.515	
16,600.0	10,342.7	17,322.8	11,142.3	118.8	119.0	-120.97	6,411.7	-1,387.6	1,551.9	1,342.4	7.407	
16,700.0	10,342.1	17,422.8	11,142.9	120.6	120.8	-121.01	6,511.7	-1,388.2	1,552.3	1,339.7	7.302	
16,800.0	10,341.4	17,522.8	11,143.5	122.4	122.6	-121.06	6,611.7	-1,388.8	1,552.7	1,337.0	7.199	
16,900.0	10,340.8	17,622.8	11,144.2	124.2	124.4	-121.11	6,711.7	-1,389.3	1,553.1	1,334.4	7.100	
17,000.0	10,340.2	17,722.8	11,144.8	126.0	126.2	-121.15	6,811.7	-1,389.9	1,553.5	1,331.7	7.003	
17,100.0	10,339.5	17,822.8	11,145.4	127.8	128.0	-121.20	6,911.7	-1,390.5	1,553.9	1,329.0	6.909	
17,200.0	10,338.9	17,922.8	11,146.1	129.6	129.7	-121.24	7,011.7	-1,391.1	1,554.3	1,326.3	6.818	
17,300.0	10,338.3	18,022.7	11,146.7	131.4	131.5	-121.29	7,111.7	-1,391.7	1,554.7	1,323.7	6.729	
17,400.0	10,337.7	18,122.7	11,147.3	133.2	133.3	-121.33	7,211.6	-1,392.3	1,555.1	1,321.0	6.643	
17,500.0	10,337.0	18,222.7	11,147.9	135.0	135.1	-121.38	7,311.6	-1,392.9	1,555.5	1,318.3	6.558	
17,600.0	10,336.4	18,322.7	11,148.6	136.8	136.9	-121.42	7,411.6	-1,393.5	1,555.9	1,315.7	6.476	
17,700.0	10,335.8	18,422.7	11,149.2	138.6	138.7	-121.47	7,511.6	-1,394.1	1,556.3	1,313.0	6.396	
17,800.0	10,335.2	18,522.7	11,149.8	140.4	140.5	-121.51	7,611.6	-1,394.6	1,556.7	1,310.3	6.318	
17,900.0	10,334.5	18,622.7	11,150.5	142.2	142.3	-121.56	7,711.6	-1,395.2	1,557.1	1,307.7	6.242	
18,000.0	10,333.9	18,722.7	11,151.1	144.0	144.1	-121.60	7,811.6	-1,395.8	1,557.5	1,305.0	6.168	
18,100.0	10,333.3	18,822.7	11,151.7	145.8	145.9	-121.65	7,911.6	-1,396.4	1,557.9	1,302.4	6.096	
18,200.0	10,332.6	18,922.7	11,152.3	147.6	147.7	-121.69	8,011.5	-1,397.0	1,558.3	1,299.7	6.026	

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 #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
Survey Program: 0-MVD default												Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Tooface (")	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning	
18,300.0	10,332.0	19,022.7	11,153.0	149.4	149.5	-121.74	8,111.5	-1,397.6	1,558.7	1,297.1	5.957		
18,400.0	10,331.4	19,122.7	11,153.6	151.2	151.3	-121.78	8,211.5	-1,398.2	1,559.1	1,294.4	5.889		
18,500.0	10,330.8	19,222.6	11,154.2	153.0	153.1	-121.83	8,311.5	-1,398.8	1,559.6	1,291.8	5.824		
18,600.0	10,330.1	19,322.6	11,154.8	154.8	154.9	-121.87	8,411.5	-1,399.4	1,560.0	1,289.1	5.760		
18,700.0	10,329.5	19,422.6	11,155.5	156.6	156.7	-121.92	8,511.5	-1,400.0	1,560.4	1,286.5	5.697		
18,800.0	10,328.9	19,522.6	11,156.1	158.4	158.5	-121.96	8,611.5	-1,400.5	1,560.8	1,283.8	5.636		
18,900.0	10,328.3	19,622.6	11,156.7	160.2	160.3	-122.01	8,711.5	-1,401.1	1,561.2	1,281.2	5.576		
19,000.0	10,327.6	19,722.6	11,157.4	162.0	162.1	-122.05	8,811.4	-1,401.7	1,561.6	1,278.6	5.517		
19,100.0	10,327.0	19,822.6	11,158.0	163.8	163.9	-122.10	8,911.4	-1,402.3	1,562.0	1,275.9	5.460		
19,200.0	10,326.4	19,922.6	11,158.6	165.6	165.7	-122.14	9,011.4	-1,402.9	1,562.4	1,273.3	5.404		
19,300.0	10,325.8	20,022.6	11,159.2	167.4	167.5	-122.19	9,111.4	-1,403.5	1,562.9	1,270.7	5.349		
19,400.0	10,325.1	20,122.6	11,159.9	169.2	169.3	-122.23	9,211.4	-1,404.1	1,563.3	1,268.1	5.296		
19,500.0	10,324.5	20,222.6	11,160.5	171.0	171.1	-122.27	9,311.4	-1,404.7	1,563.7	1,265.5	5.243		
19,600.0	10,323.9	20,322.6	11,161.1	172.8	172.9	-122.32	9,411.4	-1,405.3	1,564.1	1,262.8	5.192		
19,700.0	10,323.2	20,422.5	11,161.8	174.6	174.7	-122.36	9,511.4	-1,405.8	1,564.5	1,260.2	5.141		
19,800.0	10,322.6	20,522.5	11,162.4	176.4	176.5	-122.41	9,611.4	-1,406.4	1,565.0	1,257.6	5.092		
19,900.0	10,322.0	20,622.5	11,163.0	178.3	178.3	-122.45	9,711.3	-1,407.0	1,565.4	1,255.0	5.044		
20,000.0	10,321.4	20,722.5	11,163.6	180.1	180.1	-122.50	9,811.3	-1,407.6	1,565.8	1,252.4	4.996		
20,100.0	10,320.7	20,822.5	11,164.3	181.9	181.9	-122.54	9,911.3	-1,408.2	1,566.2	1,249.8	4.950		
20,200.0	10,320.1	20,922.5	11,164.9	183.7	183.7	-122.59	10,011.3	-1,408.8	1,566.7	1,247.2	4.904		
20,217.1	10,320.0	20,939.6	11,165.0	184.0	184.0	-122.59	10,028.4	-1,408.9	1,566.7	1,246.8	4.897 ES, SF		



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	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
0.0	0.0	3.0	3.0	0.0	0.0	89.53	8.9	1,092.2	1,092.2			
100.0	100.0	103.0	103.0	0.1	0.1	89.53	8.9	1,092.2	1,092.2	1,092.1	6,749.208	
200.0	200.0	203.0	203.0	0.3	0.3	89.53	8.9	1,092.2	1,092.2	1,091.6	1,786.557	
300.0	300.0	303.0	303.0	0.5	0.5	89.53	8.9	1,092.2	1,092.2	1,091.2	1,029.541	
400.0	400.0	403.0	403.0	0.8	0.8	89.53	8.9	1,092.2	1,092.2	1,090.7	723.130	
500.0	500.0	503.0	503.0	1.0	1.0	89.53	8.9	1,092.2	1,092.2	1,090.3	557.275	
600.0	600.0	603.0	603.0	1.2	1.2	89.53	8.9	1,092.2	1,092.2	1,089.8	453.306	
700.0	700.0	703.0	703.0	1.4	1.4	89.53	8.9	1,092.2	1,092.2	1,089.4	382.031	
800.0	800.0	803.0	803.0	1.7	1.7	89.53	8.9	1,092.2	1,092.2	1,088.9	330.125	
900.0	900.0	903.0	903.0	1.9	1.9	89.53	8.9	1,092.2	1,092.2	1,088.5	290.636	
1,000.0	1,000.0	1,003.0	1,003.0	2.1	2.1	89.53	8.9	1,092.2	1,092.2	1,088.0	259.585	
1,100.0	1,100.0	1,103.0	1,103.0	2.3	2.3	89.53	8.9	1,092.2	1,092.2	1,087.6	234.529	
1,200.0	1,200.0	1,203.0	1,203.0	2.5	2.6	89.53	8.9	1,092.2	1,092.2	1,087.1	213.884	
1,300.0	1,300.0	1,303.0	1,303.0	2.8	2.8	89.53	8.9	1,092.2	1,092.2	1,086.7	196.579	
1,400.0	1,400.0	1,403.0	1,403.0	3.0	3.0	89.53	8.9	1,092.2	1,092.2	1,086.2	181.865	
1,500.0	1,500.0	1,503.0	1,503.0	3.2	3.2	89.53	8.9	1,092.2	1,092.2	1,085.8	169.200	
1,600.0	1,600.0	1,603.0	1,603.0	3.4	3.5	89.53	8.9	1,092.2	1,092.2	1,085.3	158.185	
1,700.0	1,700.0	1,703.0	1,703.0	3.7	3.7	89.53	8.9	1,092.2	1,092.2	1,084.9	148.516	
1,800.0	1,800.0	1,803.0	1,803.0	3.9	3.9	89.53	8.9	1,092.2	1,092.2	1,084.4	139.961	
1,900.0	1,900.0	1,903.0	1,903.0	4.1	4.1	89.53	8.9	1,092.2	1,092.2	1,084.0	132.338	
2,000.0	2,000.0	2,003.0	2,003.0	4.3	4.4	89.53	8.9	1,092.2	1,092.2	1,083.5	125.502	
2,100.0	2,100.0	2,103.0	2,103.0	4.6	4.6	89.53	8.9	1,092.2	1,092.2	1,083.1	119.338	
2,200.0	2,200.0	2,203.0	2,203.0	4.8	4.8	89.53	8.9	1,092.2	1,092.2	1,082.6	113.751	
2,300.0	2,300.0	2,303.0	2,303.0	5.0	5.0	89.53	8.9	1,092.2	1,092.2	1,082.2	108.664	
2,400.0	2,400.0	2,403.0	2,403.0	5.2	5.3	89.53	8.9	1,092.2	1,092.2	1,081.7	104.012	
2,500.0	2,500.0	2,503.0	2,503.0	5.5	5.5	89.53	8.9	1,092.2	1,092.2	1,081.3	99.742	
2,600.0	2,600.0	2,603.0	2,603.0	5.7	5.7	89.53	8.9	1,092.2	1,092.2	1,080.8	95.809	
2,700.0	2,700.0	2,703.0	2,703.0	5.9	5.9	89.53	8.9	1,092.2	1,092.2	1,080.4	92.174	
2,800.0	2,800.0	2,803.0	2,803.0	6.1	6.2	89.53	8.9	1,092.2	1,092.2	1,079.9	88.805	
2,900.0	2,900.0	2,903.0	2,903.0	6.4	6.4	89.53	8.9	1,092.2	1,092.2	1,079.5	85.674	
3,000.0	3,000.0	3,003.0	3,003.0	6.6	6.6	89.53	8.9	1,092.2	1,092.2	1,079.0	82.756	
3,100.0	3,100.0	3,103.0	3,103.0	6.8	6.8	89.53	8.9	1,092.2	1,092.2	1,078.6	80.030	
3,200.0	3,200.0	3,203.0	3,203.0	7.0	7.1	89.53	8.9	1,092.2	1,092.2	1,078.1	77.478	
3,300.0	3,300.0	3,303.0	3,303.0	7.3	7.3	89.53	8.9	1,092.2	1,092.2	1,077.7	75.084	
3,400.0	3,400.0	3,403.0	3,403.0	7.5	7.5	89.53	8.9	1,092.2	1,092.2	1,077.2	72.833	
3,500.0	3,500.0	3,503.0	3,503.0	7.7	7.7	89.53	8.9	1,092.2	1,092.2	1,076.8	70.714	
3,600.0	3,600.0	3,603.0	3,603.0	7.9	8.0	89.53	8.9	1,092.2	1,092.2	1,076.3	68.714	
3,700.0	3,700.0	3,703.0	3,703.0	8.2	8.2	89.53	8.9	1,092.2	1,092.2	1,075.9	66.824	
3,800.0	3,800.0	3,803.0	3,803.0	8.4	8.4	89.53	8.9	1,092.2	1,092.2	1,075.4	65.035	
3,900.0	3,900.0	3,903.0	3,903.0	8.6	8.6	89.53	8.9	1,092.2	1,092.2	1,075.0	63.340	
4,000.0	4,000.0	4,003.0	4,003.0	8.8	8.9	89.53	8.9	1,092.2	1,092.2	1,074.5	61.731	
4,100.0	4,100.0	4,103.0	4,103.0	9.1	9.1	89.53	8.9	1,092.2	1,092.2	1,074.1	60.201	
4,200.0	4,200.0	4,203.0	4,203.0	9.3	9.3	89.53	8.9	1,092.2	1,092.2	1,073.6	58.746	
4,300.0	4,300.0	4,303.0	4,303.0	9.5	9.5	89.53	8.9	1,092.2	1,092.2	1,073.2	57.359	
4,400.0	4,400.0	4,403.0	4,403.0	9.7	9.7	89.53	8.9	1,092.2	1,092.2	1,072.7	56.036	
4,500.0	4,500.0	4,503.0	4,503.0	10.0	10.0	89.53	8.9	1,092.2	1,092.2	1,072.3	54.773	
4,600.0	4,600.0	4,603.0	4,603.0	10.2	10.2	89.53	8.9	1,092.2	1,092.2	1,071.8	53.565	
4,700.0	4,700.0	4,703.0	4,703.0	10.4	10.4	89.53	8.9	1,092.2	1,092.2	1,071.4	52.410	
4,800.0	4,800.0	4,803.0	4,803.0	10.6	10.6	89.53	8.9	1,092.2	1,092.2	1,070.9	51.303	
4,900.0	4,900.0	4,903.0	4,903.0	10.9	10.9	89.53	8.9	1,092.2	1,092.2	1,070.5	50.242	
5,000.0	5,000.0	5,003.0	5,003.0	11.1	11.1	89.53	8.9	1,092.2	1,092.2	1,070.0	49.224	
5,100.0	5,100.0	5,103.0	5,103.0	11.3	11.3	89.53	8.9	1,092.2	1,092.2	1,069.6	48.247	

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 #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	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
5,200.0	5,200.0	5,203.0	5,203.0	11.5	11.5	89.53	8.9	1,092.2	1,092.2	1,069.1	47.308	
5,300.0	5,300.0	5,303.0	5,303.0	11.8	11.8	89.53	8.9	1,092.2	1,092.2	1,068.7	46.404	
5,400.0	5,400.0	5,403.0	5,403.0	12.0	12.0	89.53	8.9	1,092.2	1,092.2	1,068.2	45.534	
5,500.0	5,500.0	5,503.0	5,503.0	12.2	12.2	89.53	8.9	1,092.2	1,092.2	1,067.8	44.697	
5,600.0	5,600.0	5,603.0	5,603.0	12.4	12.4	89.53	8.9	1,092.2	1,092.2	1,067.4	43.889	
5,700.0	5,700.0	5,703.0	5,703.0	12.7	12.7	89.53	8.9	1,092.2	1,092.2	1,066.9	43.111	
5,800.0	5,800.0	5,803.0	5,803.0	12.9	12.9	89.53	8.9	1,092.2	1,092.2	1,066.5	42.359	
5,900.0	5,900.0	5,903.0	5,903.0	13.1	13.1	89.53	8.9	1,092.2	1,092.2	1,066.0	41.633	
6,000.0	6,000.0	6,003.0	6,003.0	13.3	13.3	89.53	8.9	1,092.2	1,092.2	1,065.6	40.932	
6,100.0	6,100.0	6,103.0	6,103.0	13.6	13.6	89.53	8.9	1,092.2	1,092.2	1,065.1	40.254	
6,200.0	6,200.0	6,203.0	6,203.0	13.8	13.8	89.53	8.9	1,092.2	1,092.2	1,064.7	39.598	
6,300.0	6,300.0	6,303.0	6,303.0	14.0	14.0	89.53	8.9	1,092.2	1,092.2	1,064.2	38.963	
6,400.0	6,400.0	6,403.0	6,403.0	14.2	14.2	89.53	8.9	1,092.2	1,092.2	1,063.8	38.348	
6,500.0	6,500.0	6,503.0	6,503.0	14.5	14.5	89.53	8.9	1,092.2	1,092.2	1,063.3	37.752	
6,600.0	6,600.0	6,603.0	6,603.0	14.7	14.7	89.53	8.9	1,092.2	1,092.2	1,062.9	37.174	
6,700.0	6,700.0	6,703.0	6,703.0	14.9	14.9	89.53	8.9	1,092.2	1,092.2	1,062.4	36.614	
6,800.0	6,800.0	6,803.0	6,803.0	15.1	15.1	89.53	8.9	1,092.2	1,092.2	1,062.0	36.071	
6,900.0	6,900.0	6,903.0	6,903.0	15.4	15.4	89.53	8.9	1,092.2	1,092.2	1,061.5	35.543	
7,000.0	7,000.0	7,003.0	7,003.0	15.6	15.6	89.53	8.9	1,092.2	1,092.2	1,061.1	35.031	
7,100.0	7,100.0	7,103.0	7,103.0	15.8	15.8	89.53	8.9	1,092.2	1,092.2	1,060.6	34.533	
7,200.0	7,200.0	7,203.0	7,203.0	16.0	16.0	89.53	8.9	1,092.2	1,092.2	1,060.2	34.049	
7,300.0	7,300.0	7,303.0	7,303.0	16.3	16.3	89.53	8.9	1,092.2	1,092.2	1,059.7	33.578	
7,400.0	7,400.0	7,403.0	7,403.0	16.5	16.5	89.53	8.9	1,092.2	1,092.2	1,059.3	33.120	
7,500.0	7,500.0	7,503.0	7,503.0	16.7	16.7	89.53	8.9	1,092.2	1,092.2	1,058.8	32.675	
7,600.0	7,600.0	7,603.0	7,603.0	16.9	16.9	89.53	8.9	1,092.2	1,092.2	1,058.4	32.241	
7,700.0	7,700.0	7,703.0	7,703.0	17.2	17.2	89.53	8.9	1,092.2	1,092.2	1,057.9	31.819	
7,800.0	7,800.0	7,803.0	7,803.0	17.4	17.4	89.53	8.9	1,092.2	1,092.2	1,057.5	31.408	
7,900.0	7,900.0	7,903.0	7,903.0	17.6	17.6	89.53	8.9	1,092.2	1,092.2	1,057.0	31.007	
8,000.0	8,000.0	8,003.0	8,003.0	17.8	17.8	89.53	8.9	1,092.2	1,092.2	1,056.6	30.616	
8,100.0	8,100.0	8,103.0	8,103.0	18.1	18.1	89.53	8.9	1,092.2	1,092.2	1,056.1	30.235	
8,200.0	8,200.0	8,203.0	8,203.0	18.3	18.3	89.53	8.9	1,092.2	1,092.2	1,055.7	29.864	
8,300.0	8,300.0	8,303.0	8,303.0	18.5	18.5	89.53	8.9	1,092.2	1,092.2	1,055.2	29.501	
8,400.0	8,400.0	8,403.0	8,403.0	18.7	18.7	89.53	8.9	1,092.2	1,092.2	1,054.8	29.147	
8,500.0	8,500.0	8,503.0	8,503.0	19.0	19.0	89.53	8.9	1,092.2	1,092.2	1,054.3	28.802	
8,600.0	8,600.0	8,603.0	8,603.0	19.2	19.2	89.53	8.9	1,092.2	1,092.2	1,053.9	28.464	
8,700.0	8,700.0	8,703.0	8,703.0	19.4	19.4	89.53	8.9	1,092.2	1,092.2	1,053.4	28.135	
8,800.0	8,800.0	8,803.0	8,803.0	19.6	19.6	89.53	8.9	1,092.2	1,092.2	1,053.0	27.813	
8,900.0	8,900.0	8,903.0	8,903.0	19.9	19.9	89.53	8.9	1,092.2	1,092.2	1,052.5	27.498	
9,000.0	9,000.0	9,003.0	9,003.0	20.1	20.1	89.53	8.9	1,092.2	1,092.2	1,052.1	27.190	
9,100.0	9,100.0	9,103.0	9,103.0	20.3	20.3	89.53	8.9	1,092.2	1,092.2	1,051.6	26.889	
9,200.0	9,200.0	9,203.0	9,203.0	20.5	20.5	89.53	8.9	1,092.2	1,092.2	1,051.2	26.595	
9,300.0	9,300.0	9,303.0	9,303.0	20.8	20.8	89.53	8.9	1,092.2	1,092.2	1,050.7	26.307	
9,400.0	9,400.0	9,403.0	9,403.0	21.0	21.0	89.53	8.9	1,092.2	1,092.2	1,050.3	26.025	
9,500.0	9,500.0	9,503.0	9,503.0	21.2	21.2	89.53	8.9	1,092.2	1,092.2	1,049.8	25.749	
9,600.0	9,600.0	9,603.0	9,603.0	21.4	21.4	89.53	8.9	1,092.2	1,092.2	1,049.4	25.479	
9,700.0	9,700.0	9,703.0	9,703.0	21.7	21.7	89.53	8.9	1,092.2	1,092.2	1,048.9	25.215	
9,800.0	9,800.0	9,803.0	9,803.0	21.9	21.9	89.53	8.9	1,092.2	1,092.2	1,048.5	24.956	
9,902.5	9,902.5	9,905.5	9,905.5	22.1	22.1	89.53	8.9	1,092.2	1,092.2	1,048.0	24.696 CC	
9,925.0	9,925.0	9,928.0	9,928.0	22.2	22.2	90.07	8.9	1,092.2	1,092.2	1,047.9	24.640	
9,950.0	9,949.9	9,952.6	9,952.6	22.2	22.2	90.14	9.3	1,092.2	1,092.2	1,047.8	24.579	
9,975.0	9,974.7	9,977.2	9,977.2	22.3	22.3	90.21	11.0	1,092.2	1,092.3	1,047.7	24.519	
10,000.0	9,999.3	10,001.9	10,001.7	22.3	22.3	90.28	13.9	1,092.2	1,092.3	1,047.6	24.461	

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 #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
Survey Program: 0-MWD default												Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning:	
10,025.0	10,023.7	10,026.7	10,026.1	22.4	22.4	90.36	18.1	1,092.2	1,092.3	1,047.6	24.405		
10,050.0	10,047.7	10,051.5	10,050.3	22.4	22.4	90.43	23.6	1,092.2	1,092.4	1,047.5	24.349		
10,075.0	10,071.3	10,076.4	10,074.2	22.5	22.5	90.50	30.4	1,092.2	1,092.5	1,047.5	24.294		
10,100.0	10,094.4	10,101.4	10,097.9	22.5	22.5	90.56	38.4	1,092.2	1,092.6	1,047.5	24.240		
10,125.0	10,117.0	10,126.5	10,121.2	22.6	22.6	90.63	47.7	1,092.2	1,092.7	1,047.5	24.186		
10,150.0	10,139.1	10,151.6	10,144.0	22.6	22.6	90.70	58.3	1,092.2	1,092.8	1,047.5	24.133		
10,175.0	10,160.4	10,176.8	10,166.3	22.7	22.7	90.76	70.0	1,092.2	1,092.9	1,047.5	24.078		
10,200.0	10,181.1	10,202.1	10,188.1	22.7	22.8	90.82	83.0	1,092.2	1,093.1	1,047.6	24.023		
10,225.0	10,201.0	10,227.5	10,209.1	22.8	22.8	90.88	97.1	1,092.2	1,093.2	1,047.6	23.966		
10,250.0	10,220.1	10,253.0	10,229.5	22.9	22.9	90.94	112.4	1,092.2	1,093.4	1,047.6	23.907		
10,275.0	10,238.3	10,278.5	10,249.1	22.9	22.9	90.99	128.8	1,092.3	1,093.5	1,047.7	23.846		
10,300.0	10,255.6	10,304.2	10,267.8	23.0	23.0	91.04	146.3	1,092.3	1,093.7	1,047.7	23.782		
10,325.0	10,272.0	10,329.9	10,285.6	23.1	23.1	91.09	164.9	1,092.3	1,093.9	1,047.8	23.714		
10,350.0	10,287.3	10,355.6	10,302.4	23.1	23.1	91.14	184.4	1,092.3	1,094.1	1,047.8	23.642		
10,375.0	10,301.6	10,381.5	10,318.2	23.2	23.2	91.18	204.8	1,092.3	1,094.3	1,047.9	23.565		
10,400.0	10,314.7	10,407.4	10,332.9	23.3	23.3	91.22	226.2	1,092.3	1,094.6	1,047.9	23.484		
10,425.0	10,326.8	10,433.4	10,346.5	23.4	23.4	91.25	248.3	1,092.3	1,094.8	1,048.0	23.398		
10,450.0	10,337.7	10,459.5	10,358.9	23.5	23.5	91.29	271.3	1,092.3	1,095.0	1,048.0	23.306		
10,475.0	10,347.3	10,485.6	10,370.0	23.6	23.6	91.32	294.9	1,092.3	1,095.2	1,048.1	23.209		
10,500.0	10,355.8	10,511.8	10,379.8	23.7	23.7	91.34	319.1	1,092.3	1,095.5	1,048.1	23.106		
10,525.0	10,363.0	10,538.0	10,388.3	23.8	23.8	91.36	344.0	1,092.4	1,095.7	1,048.1	22.998		
10,550.0	10,369.0	10,564.3	10,395.5	24.0	23.9	91.38	369.3	1,092.4	1,096.0	1,048.1	22.885		
10,575.0	10,373.7	10,590.6	10,401.2	24.1	24.1	91.39	395.0	1,092.4	1,096.2	1,048.1	22.766		
10,600.0	10,377.1	10,617.0	10,405.6	24.2	24.2	91.40	421.0	1,092.4	1,096.5	1,048.0	22.642		
10,625.0	10,379.2	10,643.5	10,408.5	24.4	24.4	91.41	447.3	1,092.4	1,096.7	1,048.0	22.515		
10,650.0	10,380.0	10,669.9	10,409.9	24.5	24.5	91.41	473.7	1,092.4	1,097.0	1,048.0	22.383		
10,655.5	10,380.0	10,675.8	10,410.0	24.5	24.5	91.41	479.5	1,092.4	1,097.0	1,047.9	22.354		
10,700.0	10,379.7	10,721.0	10,409.6	24.8	24.8	91.40	524.8	1,092.4	1,097.4	1,047.8	22.106		
10,800.0	10,379.0	10,821.0	10,408.2	25.5	25.5	91.36	624.8	1,092.5	1,098.3	1,047.3	21.514		
10,900.0	10,378.4	10,921.0	10,406.8	26.4	26.3	91.32	724.8	1,092.5	1,099.3	1,046.6	20.867		
11,000.0	10,377.8	11,021.0	10,405.4	27.3	27.2	91.28	824.7	1,092.6	1,100.2	1,045.7	20.187		
11,100.0	10,377.2	11,121.0	10,404.0	28.3	28.2	91.23	924.7	1,092.6	1,101.1	1,044.6	19.489		
11,200.0	10,376.5	11,221.0	10,402.6	29.4	29.3	91.19	1,024.7	1,092.7	1,102.0	1,043.4	18.788		
11,300.0	10,375.9	11,321.0	10,401.2	30.5	30.5	91.15	1,124.7	1,092.7	1,102.9	1,042.0	18.095		
11,400.0	10,375.3	11,421.0	10,399.8	31.7	31.7	91.11	1,224.7	1,092.8	1,103.9	1,040.5	17.417		
11,500.0	10,374.7	11,521.0	10,398.3	33.0	32.9	91.07	1,324.7	1,092.8	1,104.8	1,038.9	16.760		
11,600.0	10,374.0	11,621.0	10,396.9	34.3	34.2	91.03	1,424.6	1,092.9	1,105.7	1,037.1	16.129		
11,700.0	10,373.4	11,721.0	10,395.5	35.7	35.6	90.99	1,524.6	1,092.9	1,106.6	1,035.3	15.525		
11,800.0	10,372.8	11,820.9	10,394.1	37.1	37.0	90.95	1,624.6	1,093.0	1,107.5	1,033.4	14.949		
11,900.0	10,372.2	11,920.9	10,392.7	38.5	38.4	90.91	1,724.6	1,093.0	1,108.5	1,031.5	14.402		
12,000.0	10,371.5	12,020.9	10,391.3	40.0	39.9	90.86	1,824.6	1,093.1	1,109.4	1,029.5	13.884		
12,100.0	10,370.9	12,120.9	10,389.9	41.5	41.4	90.82	1,924.5	1,093.1	1,110.3	1,027.4	13.393		
12,200.0	10,370.3	12,220.9	10,388.5	43.0	42.9	90.78	2,024.5	1,093.2	1,111.2	1,025.3	12.929		
12,300.0	10,369.6	12,320.9	10,387.1	44.6	44.5	90.74	2,124.5	1,093.2	1,112.1	1,023.1	12.491		
12,400.0	10,369.0	12,420.9	10,385.7	46.2	46.0	90.70	2,224.5	1,093.3	1,113.1	1,020.9	12.076		
12,500.0	10,368.4	12,520.9	10,384.3	47.7	47.6	90.66	2,324.5	1,093.3	1,114.0	1,018.7	11.685		
12,600.0	10,367.8	12,620.9	10,382.9	49.3	49.2	90.62	2,424.5	1,093.4	1,114.9	1,016.4	11.315		
12,700.0	10,367.1	12,720.9	10,381.5	51.0	50.8	90.58	2,524.4	1,093.4	1,115.9	1,014.1	10.964		
12,800.0	10,366.5	12,820.9	10,380.1	52.6	52.4	90.54	2,624.4	1,093.5	1,116.8	1,011.7	10.633		
12,900.0	10,365.9	12,920.9	10,378.7	54.2	54.1	90.50	2,724.4	1,093.5	1,117.7	1,009.4	10.319		
13,000.0	10,365.3	13,020.9	10,377.3	55.9	55.7	90.46	2,824.4	1,093.6	1,118.6	1,007.0	10.022		
13,100.0	10,364.6	13,120.9	10,375.9	57.6	57.4	90.42	2,924.4	1,093.6	1,119.6	1,004.6	9.740		

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 #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	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	
13,200.0	10,364.0	13,220.8	10,374.5	59.2	59.1	90.38	3,024.4	1,093.7	1,120.5	1,002.2	9.472		
13,300.0	10,363.4	13,320.8	10,373.1	60.9	60.7	90.34	3,124.3	1,093.7	1,121.4	999.8	9.218		
13,400.0	10,362.7	13,420.8	10,371.7	62.6	62.4	90.30	3,224.3	1,093.8	1,122.4	997.3	8.976		
13,500.0	10,362.1	13,520.8	10,370.3	64.3	64.1	90.26	3,324.3	1,093.8	1,123.3	994.9	8.747		
13,600.0	10,361.5	13,620.8	10,368.9	66.0	65.8	90.22	3,424.3	1,093.8	1,124.2	992.4	8.528		
13,700.0	10,360.9	13,720.8	10,367.5	67.7	67.5	90.18	3,524.3	1,093.9	1,125.1	989.9	8.319		
13,800.0	10,360.2	13,820.8	10,366.1	69.4	69.2	90.14	3,624.3	1,093.9	1,126.1	987.4	8.120		
13,900.0	10,359.6	13,920.8	10,364.7	71.2	71.0	90.10	3,724.2	1,094.0	1,127.0	984.9	7.930		
14,000.0	10,359.0	14,020.8	10,363.3	72.9	72.7	90.06	3,824.2	1,094.0	1,127.9	982.4	7.748		
14,100.0	10,358.4	14,120.8	10,361.9	74.6	74.4	90.02	3,924.2	1,094.1	1,128.9	979.8	7.575		
14,200.0	10,357.7	14,220.8	10,360.5	76.4	76.2	89.98	4,024.2	1,094.1	1,129.8	977.3	7.408		
14,300.0	10,357.1	14,320.8	10,359.1	78.1	77.9	89.94	4,124.2	1,094.2	1,130.7	974.8	7.249		
14,400.0	10,356.5	14,420.8	10,357.7	79.8	79.6	89.90	4,224.2	1,094.2	1,131.7	972.2	7.097		
14,500.0	10,355.8	14,520.7	10,356.3	81.6	81.4	89.87	4,324.1	1,094.3	1,132.6	969.7	6.950		
14,600.0	10,355.2	14,620.7	10,354.9	83.3	83.1	89.83	4,424.1	1,094.3	1,133.6	967.1	6.810		
14,700.0	10,354.6	14,720.7	10,353.4	85.1	84.9	89.79	4,524.1	1,094.4	1,134.5	964.5	6.675		
14,800.0	10,354.0	14,820.7	10,352.0	86.9	86.6	89.75	4,624.1	1,094.4	1,135.4	962.0	6.545		
14,900.0	10,353.3	14,920.7	10,350.6	88.6	88.4	89.71	4,724.1	1,094.5	1,136.4	959.4	6.421		
15,000.0	10,352.7	14,966.6	10,350.0	90.4	89.2	89.69	4,769.9	1,094.5	1,136.6	959.0	6.341 ES		
15,100.0	10,352.1	14,966.6	10,350.0	92.1	89.2	89.69	4,769.9	1,094.5	1,148.6	967.3	6.335 SF		
15,200.0	10,351.5	14,966.6	10,350.0	93.9	89.2	89.69	4,769.9	1,094.5	1,167.2	984.1	6.375		
15,300.0	10,350.8	14,966.6	10,350.0	95.7	89.2	89.69	4,769.9	1,094.5	1,193.9	1,009.0	6.458		
15,400.0	10,350.2	14,966.6	10,350.0	97.4	89.2	89.69	4,769.9	1,094.5	1,228.1	1,041.5	6.581		
15,500.0	10,349.6	14,966.6	10,350.0	99.2	89.2	89.69	4,769.9	1,094.5	1,269.3	1,080.9	6.737		
15,600.0	10,349.0	14,966.6	10,350.0	101.0	89.2	89.69	4,769.9	1,094.5	1,316.9	1,126.7	6.925		
15,700.0	10,348.3	14,966.6	10,350.0	102.8	89.2	89.69	4,769.9	1,094.5	1,370.1	1,178.1	7.138		
15,800.0	10,347.7	14,966.6	10,350.0	104.5	89.2	89.69	4,769.9	1,094.5	1,428.3	1,234.6	7.373		
15,900.0	10,347.1	14,966.6	10,350.0	106.3	89.2	89.69	4,769.9	1,094.5	1,491.0	1,295.5	7.626		
16,000.0	10,346.4	14,966.6	10,350.0	108.1	89.2	89.69	4,769.9	1,094.5	1,557.6	1,360.3	7.895		
16,100.0	10,345.8	14,966.6	10,350.0	109.9	89.2	89.69	4,769.9	1,094.5	1,627.6	1,428.5	8.176		
16,200.0	10,345.2	14,966.6	10,350.0	111.7	89.2	89.69	4,769.9	1,094.5	1,700.6	1,499.7	8.467		
16,300.0	10,344.6	14,966.6	10,350.0	113.5	89.2	89.69	4,769.9	1,094.5	1,776.2	1,573.6	8.765		
16,400.0	10,343.9	14,966.6	10,350.0	115.2	89.2	89.69	4,769.9	1,094.5	1,854.2	1,649.7	9.070		
16,500.0	10,343.3	14,966.6	10,350.0	117.0	89.2	89.69	4,769.9	1,094.5	1,934.1	1,727.9	9.379		
16,600.0	10,342.7	14,966.6	10,350.0	118.8	89.2	89.69	4,769.9	1,094.5	2,015.9	1,807.9	9.692		
16,700.0	10,342.1	14,966.6	10,350.0	120.6	89.2	89.69	4,769.9	1,094.5	2,099.2	1,889.4	10.006		
16,800.0	10,341.4	14,966.6	10,350.0	122.4	89.2	89.69	4,769.9	1,094.5	2,184.0	1,972.4	10.322		
16,900.0	10,340.8	14,966.6	10,350.0	124.2	89.2	89.69	4,769.9	1,094.5	2,270.0	2,056.6	10.638		
17,000.0	10,340.2	14,966.6	10,350.0	126.0	89.2	89.69	4,769.9	1,094.5	2,357.1	2,141.9	10.954		
17,100.0	10,339.5	14,966.6	10,350.0	127.8	89.2	89.69	4,769.9	1,094.5	2,445.1	2,228.2	11.270		
17,200.0	10,338.9	14,966.6	10,350.0	129.6	89.2	89.69	4,769.9	1,094.5	2,534.1	2,315.3	11.584		
17,300.0	10,338.3	14,966.6	10,350.0	131.4	89.2	89.69	4,769.9	1,094.5	2,623.9	2,403.3	11.897		
17,400.0	10,337.7	14,966.6	10,350.0	133.2	89.2	89.69	4,769.9	1,094.5	2,714.3	2,492.0	12.208		
17,500.0	10,337.0	14,966.6	10,350.0	135.0	89.2	89.69	4,769.9	1,094.5	2,805.5	2,581.3	12.516		
17,600.0	10,336.4	14,966.6	10,350.0	136.8	89.2	89.69	4,769.9	1,094.5	2,897.2	2,671.2	12.822		
17,700.0	10,335.8	14,966.6	10,350.0	138.6	89.2	89.69	4,769.9	1,094.5	2,989.4	2,761.7	13.126		
17,800.0	10,335.2	14,966.6	10,350.0	140.4	89.2	89.69	4,769.9	1,094.5	3,082.1	2,852.6	13.427		
17,900.0	10,334.5	14,966.6	10,350.0	142.2	89.2	89.69	4,769.9	1,094.5	3,175.3	2,943.9	13.726		
18,000.0	10,333.9	14,966.6	10,350.0	144.0	89.2	89.69	4,769.9	1,094.5	3,268.8	3,035.7	14.021		
18,100.0	10,333.3	14,966.6	10,350.0	145.8	89.2	89.69	4,769.9	1,094.5	3,362.8	3,127.8	14.313		
18,200.0	10,332.6	14,966.6	10,350.0	147.6	89.2	89.69	4,769.9	1,094.5	3,457.1	3,220.3	14.603		
18,300.0	10,332.0	14,966.6	10,350.0	149.4	89.2	89.69	4,769.9	1,094.5	3,551.7	3,313.1	14.889		

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 #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	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	Vertical Depth	Offset	Semi Major Axis	Highside	Offset Wellbore Centre	Distance	Between Centres	Between Ellipses	Separation Factor	Warning		
Measured Depth (usft)	Reference Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	(usft)	(usft)			
18,400.0	10,331.4	14,966.6	10,350.0	151.2	89.2	89.69	4,769.9	1,094.5	3,646.5	3,406.2	15.172		
18,500.0	10,330.8	14,966.6	10,350.0	153.0	89.2	89.69	4,769.9	1,094.5	3,741.7	3,499.5	15.452		
18,600.0	10,330.1	14,966.6	10,350.0	154.8	89.2	89.69	4,769.9	1,094.5	3,837.1	3,593.1	15.729		
18,700.0	10,329.5	14,966.6	10,350.0	156.6	89.2	89.69	4,769.9	1,094.5	3,932.7	3,686.9	16.002		
18,800.0	10,328.9	14,966.6	10,350.0	158.4	89.2	89.69	4,769.9	1,094.5	4,028.5	3,781.0	16.273		
18,900.0	10,328.3	14,966.6	10,350.0	160.2	89.2	89.69	4,769.9	1,094.5	4,124.6	3,875.2	16.540		
19,000.0	10,327.6	14,966.6	10,350.0	162.0	89.2	89.69	4,769.9	1,094.5	4,220.8	3,969.6	16.804		
19,100.0	10,327.0	14,966.6	10,350.0	163.8	89.2	89.69	4,769.9	1,094.5	4,317.2	4,064.2	17.065		
19,200.0	10,326.4	14,966.6	10,350.0	165.6	89.2	89.69	4,769.9	1,094.5	4,413.7	4,158.9	17.323		
19,300.0	10,325.8	14,966.6	10,350.0	167.4	89.2	89.69	4,769.9	1,094.5	4,510.4	4,253.8	17.578		
19,400.0	10,325.1	14,966.6	10,350.0	169.2	89.2	89.69	4,769.9	1,094.5	4,607.3	4,348.9	17.830		
19,500.0	10,324.5	14,966.6	10,350.0	171.0	89.2	89.69	4,769.9	1,094.5	4,704.2	4,444.0	18.079		
19,600.0	10,323.9	14,966.6	10,350.0	172.8	89.2	89.69	4,769.9	1,094.5	4,801.3	4,539.3	18.325		
19,700.0	10,323.2	14,966.6	10,350.0	174.6	89.2	89.69	4,769.9	1,094.5	4,898.6	4,634.7	18.568		
19,800.0	10,322.6	14,966.6	10,350.0	176.4	89.2	89.69	4,769.9	1,094.5	4,995.9	4,730.2	18.808		
19,900.0	10,322.0	14,966.6	10,350.0	178.3	89.2	89.69	4,769.9	1,094.5	5,093.3	4,825.9	19.045		
20,000.0	10,321.4	14,966.6	10,350.0	180.1	89.2	89.69	4,769.9	1,094.5	5,190.8	4,921.6	19.279		
20,100.0	10,320.7	14,966.6	10,350.0	181.9	89.2	89.69	4,769.9	1,094.5	5,288.4	5,017.4	19.511		
20,200.0	10,320.1	14,966.6	10,350.0	183.7	89.2	89.69	4,769.9	1,094.5	5,386.2	5,113.3	19.739		
20,217.1	10,320.0	14,966.6	10,350.0	184.0	89.2	89.69	4,769.9	1,094.5	5,402.9	5,129.7	19.778		



HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design											Offset Site Error:	0.0 usft
Sec 27, T22S, R34E - Squints Federal Com #8H - Wellbore #1 - Design #1											Offset Well Error:	0.0 usft
Survey Program: 0-MWD default												
Reference Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning:
0.0	0.0	1.0	1.0	0.0	0.0	-90.46	-10.6	-1,319.7	1,319.7			
100.0	100.0	101.0	101.0	0.1	0.1	-90.46	-10.6	-1,319.7	1,319.7	1,319.6	8,388.028	
200.0	200.0	201.0	201.0	0.3	0.3	-90.46	-10.6	-1,319.7	1,319.7	1,319.1	2,174.676	
300.0	300.0	301.0	301.0	0.5	0.5	-90.46	-10.6	-1,319.7	1,319.7	1,318.7	1,249.282	
400.0	400.0	401.0	401.0	0.8	0.8	-90.46	-10.6	-1,319.7	1,319.7	1,318.2	876.362	
500.0	500.0	501.0	501.0	1.0	1.0	-90.46	-10.6	-1,319.7	1,319.7	1,317.8	674.900	
600.0	600.0	601.0	601.0	1.2	1.2	-90.46	-10.6	-1,319.7	1,319.7	1,317.3	548.750	
700.0	700.0	701.0	701.0	1.4	1.4	-90.46	-10.6	-1,319.7	1,319.7	1,316.9	462.333	
800.0	800.0	801.0	801.0	1.7	1.7	-90.46	-10.6	-1,319.7	1,319.7	1,316.4	399.430	
900.0	900.0	901.0	901.0	1.9	1.9	-90.46	-10.6	-1,319.7	1,319.7	1,316.0	351.594	
1,000.0	1,000.0	1,001.0	1,001.0	2.1	2.1	-90.46	-10.6	-1,319.7	1,319.7	1,315.5	313.991	
1,100.0	1,100.0	1,101.0	1,101.0	2.3	2.3	-90.46	-10.6	-1,319.7	1,319.7	1,315.1	283.654	
1,200.0	1,200.0	1,201.0	1,201.0	2.5	2.6	-90.46	-10.6	-1,319.7	1,319.7	1,314.6	258.662	
1,300.0	1,300.0	1,301.0	1,301.0	2.8	2.8	-90.46	-10.6	-1,319.7	1,319.7	1,314.2	237.718	
1,400.0	1,400.0	1,401.0	1,401.0	3.0	3.0	-90.46	-10.6	-1,319.7	1,319.7	1,313.7	219.911	
1,500.0	1,500.0	1,501.0	1,501.0	3.2	3.2	-90.46	-10.6	-1,319.7	1,319.7	1,313.3	204.586	
1,600.0	1,600.0	1,601.0	1,601.0	3.4	3.5	-90.46	-10.6	-1,319.7	1,319.7	1,312.8	191.258	
1,700.0	1,700.0	1,701.0	1,701.0	3.7	3.7	-90.46	-10.6	-1,319.7	1,319.7	1,312.4	179.560	
1,800.0	1,800.0	1,801.0	1,801.0	3.9	3.9	-90.46	-10.6	-1,319.7	1,319.7	1,311.9	169.211	
1,900.0	1,900.0	1,901.0	1,901.0	4.1	4.1	-90.46	-10.6	-1,319.7	1,319.7	1,311.5	159.990	
2,000.0	2,000.0	2,001.0	2,001.0	4.3	4.4	-90.46	-10.6	-1,319.7	1,319.7	1,311.0	151.722	
2,100.0	2,100.0	2,101.0	2,101.0	4.6	4.6	-90.46	-10.6	-1,319.7	1,319.7	1,310.6	144.266	
2,200.0	2,200.0	2,201.0	2,201.0	4.8	4.8	-90.46	-10.6	-1,319.7	1,319.7	1,310.1	137.509	
2,300.0	2,300.0	2,301.0	2,301.0	5.0	5.0	-90.46	-10.6	-1,319.7	1,319.7	1,309.7	131.356	
2,400.0	2,400.0	2,401.0	2,401.0	5.2	5.2	-90.46	-10.6	-1,319.7	1,319.7	1,309.2	125.731	
2,500.0	2,500.0	2,501.0	2,501.0	5.5	5.5	-90.46	-10.6	-1,319.7	1,319.7	1,308.8	120.567	
2,600.0	2,600.0	2,601.0	2,601.0	5.7	5.7	-90.46	-10.6	-1,319.7	1,319.7	1,308.3	115.811	
2,700.0	2,700.0	2,701.0	2,701.0	5.9	5.9	-90.46	-10.6	-1,319.7	1,319.7	1,307.9	111.416	
2,800.0	2,800.0	2,801.0	2,801.0	6.1	6.1	-90.46	-10.6	-1,319.7	1,319.7	1,307.4	107.342	
2,900.0	2,900.0	2,901.0	2,901.0	6.4	6.4	-90.46	-10.6	-1,319.7	1,319.7	1,307.0	103.556	
3,000.0	3,000.0	3,001.0	3,001.0	6.6	6.6	-90.46	-10.6	-1,319.7	1,319.7	1,306.5	100.028	
3,100.0	3,100.0	3,101.0	3,101.0	6.8	6.8	-90.46	-10.6	-1,319.7	1,319.7	1,306.1	96.732	
3,200.0	3,200.0	3,201.0	3,201.0	7.0	7.0	-90.46	-10.6	-1,319.7	1,319.7	1,305.6	93.646	
3,300.0	3,300.0	3,301.0	3,301.0	7.3	7.3	-90.46	-10.6	-1,319.7	1,319.7	1,305.2	90.752	
3,400.0	3,400.0	3,401.0	3,401.0	7.5	7.5	-90.46	-10.6	-1,319.7	1,319.7	1,304.8	88.030	
3,500.0	3,500.0	3,501.0	3,501.0	7.7	7.7	-90.46	-10.6	-1,319.7	1,319.7	1,304.3	85.468	
3,600.0	3,600.0	3,601.0	3,601.0	7.9	7.9	-90.46	-10.6	-1,319.7	1,319.7	1,303.9	83.050	
3,700.0	3,700.0	3,701.0	3,701.0	8.2	8.2	-90.46	-10.6	-1,319.7	1,319.7	1,303.4	80.765	
3,800.0	3,800.0	3,801.0	3,801.0	8.4	8.4	-90.46	-10.6	-1,319.7	1,319.7	1,303.0	78.603	
3,900.0	3,900.0	3,901.0	3,901.0	8.6	8.6	-90.46	-10.6	-1,319.7	1,319.7	1,302.5	76.553	
4,000.0	4,000.0	4,001.0	4,001.0	8.8	8.8	-90.46	-10.6	-1,319.7	1,319.7	1,302.1	74.608	
4,100.0	4,100.0	4,101.0	4,101.0	9.1	9.1	-90.46	-10.6	-1,319.7	1,319.7	1,301.6	72.759	
4,200.0	4,200.0	4,201.0	4,201.0	9.3	9.3	-90.46	-10.6	-1,319.7	1,319.7	1,301.2	70.999	
4,300.0	4,300.0	4,301.0	4,301.0	9.5	9.5	-90.46	-10.6	-1,319.7	1,319.7	1,300.7	69.323	
4,400.0	4,400.0	4,401.0	4,401.0	9.7	9.7	-90.46	-10.6	-1,319.7	1,319.7	1,300.3	67.724	
4,500.0	4,500.0	4,501.0	4,501.0	10.0	10.0	-90.46	-10.6	-1,319.7	1,319.7	1,299.8	66.196	
4,600.0	4,600.0	4,601.0	4,601.0	10.2	10.2	-90.46	-10.6	-1,319.7	1,319.7	1,299.4	64.737	
4,700.0	4,700.0	4,701.0	4,701.0	10.4	10.4	-90.46	-10.6	-1,319.7	1,319.7	1,298.9	63.340	
4,800.0	4,800.0	4,801.0	4,801.0	10.6	10.6	-90.46	-10.6	-1,319.7	1,319.7	1,298.5	62.002	
4,900.0	4,900.0	4,901.0	4,901.0	10.9	10.9	-90.46	-10.6	-1,319.7	1,319.7	1,298.0	60.720	
5,000.0	5,000.0	5,001.0	5,001.0	11.1	11.1	-90.46	-10.6	-1,319.7	1,319.7	1,297.6	59.490	
5,100.0	5,100.0	5,101.0	5,101.0	11.3	11.3	-90.46	-10.6	-1,319.7	1,319.7	1,297.1	58.308	

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 #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design: Sec 27, T22S, R34E - Squints Federal Com #8H - Wellbore #1 - Design #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD default												Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning	
5,200.0	5,200.0	5,201.0	5,201.0	11.5	11.5	-90.46	-10.6	-1,319.7	1,319.7	1,296.7	57.173		
5,300.0	5,300.0	5,301.0	5,301.0	11.8	11.8	-90.46	-10.6	-1,319.7	1,319.7	1,296.2	56.080		
5,400.0	5,400.0	5,401.0	5,401.0	12.0	12.0	-90.46	-10.6	-1,319.7	1,319.7	1,295.8	55.029		
5,500.0	5,500.0	5,501.0	5,501.0	12.2	12.2	-90.46	-10.6	-1,319.7	1,319.7	1,295.3	54.017		
5,600.0	5,600.0	5,601.0	5,601.0	12.4	12.4	-90.46	-10.6	-1,319.7	1,319.7	1,294.9	53.041		
5,700.0	5,700.0	5,701.0	5,701.0	12.7	12.7	-90.46	-10.6	-1,319.7	1,319.7	1,294.4	52.100		
5,800.0	5,800.0	5,801.0	5,801.0	12.9	12.9	-90.46	-10.6	-1,319.7	1,319.7	1,294.0	51.191		
5,900.0	5,900.0	5,901.0	5,901.0	13.1	13.1	-90.46	-10.6	-1,319.7	1,319.7	1,293.5	50.314		
6,000.0	6,000.0	6,001.0	6,001.0	13.3	13.3	-90.46	-10.6	-1,319.7	1,319.7	1,293.1	49.466		
6,100.0	6,100.0	6,101.0	6,101.0	13.6	13.6	-90.46	-10.6	-1,319.7	1,319.7	1,292.6	48.646		
6,200.0	6,200.0	6,201.0	6,201.0	13.8	13.8	-90.46	-10.6	-1,319.7	1,319.7	1,292.2	47.854		
6,300.0	6,300.0	6,301.0	6,301.0	14.0	14.0	-90.46	-10.6	-1,319.7	1,319.7	1,291.7	47.086		
6,400.0	6,400.0	6,401.0	6,401.0	14.2	14.2	-90.46	-10.6	-1,319.7	1,319.7	1,291.3	46.343		
6,500.0	6,500.0	6,501.0	6,501.0	14.5	14.5	-90.46	-10.6	-1,319.7	1,319.7	1,290.8	45.623		
6,600.0	6,600.0	6,601.0	6,601.0	14.7	14.7	-90.46	-10.6	-1,319.7	1,319.7	1,290.4	44.924		
6,700.0	6,700.0	6,701.0	6,701.0	14.9	14.9	-90.46	-10.6	-1,319.7	1,319.7	1,289.9	44.247		
6,800.0	6,800.0	6,801.0	6,801.0	15.1	15.1	-90.46	-10.6	-1,319.7	1,319.7	1,289.5	43.590		
6,900.0	6,900.0	6,901.0	6,901.0	15.4	15.4	-90.46	-10.6	-1,319.7	1,319.7	1,289.0	42.953		
7,000.0	7,000.0	7,001.0	7,001.0	15.6	15.6	-90.46	-10.6	-1,319.7	1,319.7	1,288.6	42.333		
7,100.0	7,100.0	7,101.0	7,101.0	15.8	15.8	-90.46	-10.6	-1,319.7	1,319.7	1,288.1	41.732		
7,200.0	7,200.0	7,201.0	7,201.0	16.0	16.0	-90.46	-10.6	-1,319.7	1,319.7	1,287.7	41.147		
7,300.0	7,300.0	7,301.0	7,301.0	16.3	16.3	-90.46	-10.6	-1,319.7	1,319.7	1,287.2	40.578		
7,400.0	7,400.0	7,401.0	7,401.0	16.5	16.5	-90.46	-10.6	-1,319.7	1,319.7	1,286.8	40.025		
7,500.0	7,500.0	7,501.0	7,501.0	16.7	16.7	-90.46	-10.6	-1,319.7	1,319.7	1,286.3	39.486		
7,600.0	7,600.0	7,601.0	7,601.0	16.9	16.9	-90.46	-10.6	-1,319.7	1,319.7	1,285.9	38.962		
7,700.0	7,700.0	7,701.0	7,701.0	17.2	17.2	-90.46	-10.6	-1,319.7	1,319.7	1,285.4	38.452		
7,800.0	7,800.0	7,801.0	7,801.0	17.4	17.4	-90.46	-10.6	-1,319.7	1,319.7	1,285.0	37.955		
7,900.0	7,900.0	7,901.0	7,901.0	17.6	17.6	-90.46	-10.6	-1,319.7	1,319.7	1,284.5	37.471		
8,000.0	8,000.0	8,001.0	8,001.0	17.8	17.8	-90.46	-10.6	-1,319.7	1,319.7	1,284.1	36.998		
8,100.0	8,100.0	8,101.0	8,101.0	18.1	18.1	-90.46	-10.6	-1,319.7	1,319.7	1,283.6	36.538		
8,200.0	8,200.0	8,201.0	8,201.0	18.3	18.3	-90.46	-10.6	-1,319.7	1,319.7	1,283.2	36.089		
8,300.0	8,300.0	8,301.0	8,301.0	18.5	18.5	-90.46	-10.6	-1,319.7	1,319.7	1,282.7	35.650		
8,400.0	8,400.0	8,401.0	8,401.0	18.7	18.7	-90.46	-10.6	-1,319.7	1,319.7	1,282.3	35.223		
8,500.0	8,500.0	8,501.0	8,501.0	19.0	19.0	-90.46	-10.6	-1,319.7	1,319.7	1,281.8	34.805		
8,600.0	8,600.0	8,601.0	8,601.0	19.2	19.2	-90.46	-10.6	-1,319.7	1,319.7	1,281.4	34.397		
8,700.0	8,700.0	8,701.0	8,701.0	19.4	19.4	-90.46	-10.6	-1,319.7	1,319.7	1,280.9	33.999		
8,800.0	8,800.0	8,801.0	8,801.0	19.6	19.6	-90.46	-10.6	-1,319.7	1,319.7	1,280.5	33.610		
8,900.0	8,900.0	8,901.0	8,901.0	19.9	19.9	-90.46	-10.6	-1,319.7	1,319.7	1,280.0	33.229		
9,000.0	9,000.0	9,001.0	9,001.0	20.1	20.1	-90.46	-10.6	-1,319.7	1,319.7	1,279.6	32.857		
9,100.0	9,100.0	9,101.0	9,101.0	20.3	20.3	-90.46	-10.6	-1,319.7	1,319.7	1,279.1	32.494		
9,200.0	9,200.0	9,201.0	9,201.0	20.5	20.5	-90.46	-10.6	-1,319.7	1,319.7	1,278.7	32.138		
9,300.0	9,300.0	9,301.0	9,301.0	20.8	20.8	-90.46	-10.6	-1,319.7	1,319.7	1,278.2	31.790		
9,400.0	9,400.0	9,401.0	9,401.0	21.0	21.0	-90.46	-10.6	-1,319.7	1,319.7	1,277.8	31.450		
9,500.0	9,500.0	9,501.0	9,501.0	21.2	21.2	-90.46	-10.6	-1,319.7	1,319.7	1,277.3	31.116		
9,600.0	9,600.0	9,601.0	9,601.0	21.4	21.4	-90.46	-10.6	-1,319.7	1,319.7	1,276.9	30.790		
9,700.0	9,700.0	9,701.0	9,701.0	21.7	21.7	-90.46	-10.6	-1,319.7	1,319.7	1,276.4	30.470		
9,800.0	9,800.0	9,801.0	9,801.0	21.9	21.9	-90.46	-10.6	-1,319.7	1,319.7	1,276.0	30.157		
9,858.0	9,858.0	9,859.0	9,859.0	22.0	22.0	-90.46	-10.6	-1,319.7	1,319.7	1,275.7	29.979 CC		
9,902.5	9,902.5	9,903.4	9,903.4	22.1	22.1	-90.42	-9.6	-1,319.7	1,319.7	1,275.5	29.844		
9,925.0	9,925.0	9,925.7	9,925.6	22.2	22.2	-89.85	-7.6	-1,319.7	1,319.7	1,275.4	29.777		
9,950.0	9,949.9	9,950.4	9,950.1	22.2	22.2	-89.78	-4.3	-1,319.8	1,319.8	1,275.3	29.704		
9,975.0	9,974.7	9,975.0	9,974.2	22.3	22.3	-89.71	0.4	-1,319.8	1,319.8	1,275.2	29.633		

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 #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
Sec 27, T22S, R34E - Squints Federal Com #8H - Wellbore #1 - Design #1												Offset Well Error:	0.0 usft
Survey Program: 0-MWD default													
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning:	
10,000.0	9,999.3	9,999.6	9,998.1	22.3	22.3	-89.64	6.2	-1,319.8	1,319.8	1,275.1	29.563		
10,025.0	10,023.7	10,024.1	10,021.6	22.4	22.4	-89.57	13.3	-1,319.9	1,319.8	1,275.0	29.495		
10,050.0	10,047.7	10,048.5	10,044.6	22.4	22.4	-89.51	21.5	-1,320.0	1,319.8	1,274.9	29.427		
10,075.0	10,071.3	10,072.9	10,067.0	22.5	22.5	-89.44	30.8	-1,320.1	1,319.8	1,274.9	29.361		
10,100.0	10,094.4	10,097.1	10,088.9	22.5	22.5	-89.38	41.3	-1,320.2	1,319.8	1,274.8	29.294		
10,125.0	10,117.0	10,121.3	10,110.2	22.6	22.6	-89.32	52.8	-1,320.3	1,319.8	1,274.7	29.227		
10,150.0	10,139.1	10,145.5	10,130.8	22.6	22.6	-89.26	65.3	-1,320.4	1,319.9	1,274.6	29.159		
10,175.0	10,160.4	10,169.5	10,150.8	22.7	22.7	-89.21	78.9	-1,320.5	1,319.9	1,274.5	29.090		
10,200.0	10,181.1	10,193.6	10,169.9	22.7	22.7	-89.15	93.3	-1,320.6	1,319.9	1,274.4	29.019		
10,225.0	10,201.0	10,217.5	10,188.3	22.8	22.8	-89.10	108.7	-1,320.8	1,319.9	1,274.3	28.946		
10,250.0	10,220.1	10,241.4	10,205.8	22.9	22.9	-89.05	125.0	-1,320.9	1,319.9	1,274.2	28.870		
10,275.0	10,238.3	10,265.3	10,222.4	22.9	22.9	-89.00	142.0	-1,321.1	1,319.9	1,274.1	28.790		
10,300.0	10,255.6	10,289.1	10,238.2	23.0	23.0	-88.96	159.9	-1,321.2	1,320.0	1,274.0	28.707		
10,325.0	10,272.0	10,312.8	10,253.0	23.1	23.1	-88.91	178.4	-1,321.4	1,320.0	1,273.9	28.619		
10,350.0	10,287.3	10,336.5	10,266.9	23.1	23.1	-88.87	197.7	-1,321.6	1,320.0	1,273.7	28.526		
10,375.0	10,301.6	10,360.2	10,279.7	23.2	23.2	-88.84	217.6	-1,321.7	1,320.0	1,273.6	28.427		
10,400.0	10,314.7	10,383.9	10,291.6	23.3	23.3	-88.81	238.0	-1,321.9	1,320.0	1,273.4	28.324		
10,425.0	10,326.8	10,407.5	10,302.4	23.4	23.4	-88.78	259.0	-1,322.1	1,320.0	1,273.3	28.214		
10,450.0	10,337.7	10,431.1	10,312.1	23.5	23.5	-88.75	280.5	-1,322.3	1,320.1	1,273.1	28.098		
10,475.0	10,347.3	10,454.6	10,320.8	23.6	23.6	-88.72	302.4	-1,322.5	1,320.1	1,272.9	27.977		
10,500.0	10,355.8	10,478.2	10,328.3	23.7	23.7	-88.70	324.7	-1,322.7	1,320.1	1,272.7	27.850		
10,525.0	10,363.0	10,501.7	10,334.8	23.8	23.8	-88.69	347.3	-1,322.9	1,320.1	1,272.5	27.717		
10,550.0	10,369.0	10,525.0	10,340.0	24.0	23.9	-88.67	370.0	-1,323.1	1,320.1	1,272.2	27.578		
10,575.0	10,373.7	10,548.7	10,344.3	24.1	24.0	-88.66	393.3	-1,323.3	1,320.1	1,272.0	27.434		
10,600.0	10,377.1	10,572.1	10,347.3	24.2	24.2	-88.66	416.6	-1,323.5	1,320.1	1,271.7	27.284		
10,625.0	10,379.2	10,595.6	10,349.2	24.4	24.3	-88.65	440.0	-1,323.7	1,320.1	1,271.5	27.131		
10,650.0	10,380.0	10,619.1	10,350.0	24.5	24.4	-88.65	463.4	-1,323.9	1,320.1	1,271.2	26.973		
10,655.1	10,380.0	10,623.9	10,350.0	24.5	24.5	-88.65	468.3	-1,324.0	1,320.1	1,271.1	26.941		
10,655.5	10,380.0	10,625.0	10,350.0	24.5	24.5	-88.65	469.3	-1,324.0	1,320.1	1,271.1	26.936		
10,670.7	10,379.9	10,639.4	10,349.9	24.6	24.6	-88.66	483.8	-1,324.1	1,320.1	1,270.9	26.822		
10,700.0	10,379.7	10,668.7	10,349.7	24.8	24.8	-88.66	513.1	-1,324.4	1,320.1	1,270.5	26.631		
10,800.0	10,379.0	10,768.7	10,349.2	25.5	25.5	-88.66	613.1	-1,325.2	1,320.1	1,269.1	25.886		
10,900.0	10,378.4	10,868.7	10,348.7	26.4	26.3	-88.67	713.0	-1,326.1	1,320.1	1,267.5	25.081		
11,000.0	10,377.8	10,968.7	10,348.2	27.3	27.2	-88.67	813.0	-1,327.0	1,320.1	1,265.6	24.237		
11,100.0	10,377.2	11,068.7	10,347.6	28.3	28.2	-88.67	913.0	-1,327.9	1,320.1	1,263.6	23.375		
11,200.0	10,376.5	11,168.7	10,347.1	29.4	29.3	-88.68	1,013.0	-1,328.8	1,320.1	1,261.5	22.511		
11,300.0	10,375.9	11,268.7	10,346.6	30.5	30.5	-88.68	1,113.0	-1,329.7	1,320.1	1,259.2	21.659		
11,400.0	10,375.3	11,368.7	10,346.1	31.7	31.7	-88.69	1,213.0	-1,330.6	1,320.1	1,256.7	20.827		
11,500.0	10,374.7	11,468.7	10,345.5	33.0	32.9	-88.69	1,313.0	-1,331.5	1,320.1	1,254.2	20.023		
11,600.0	10,374.0	11,568.7	10,345.0	34.3	34.3	-88.70	1,413.0	-1,332.3	1,320.1	1,251.5	19.250		
11,700.0	10,373.4	11,668.7	10,344.5	35.7	35.6	-88.70	1,513.0	-1,333.2	1,320.1	1,248.8	18.512		
11,800.0	10,372.8	11,768.7	10,344.0	37.1	37.0	-88.71	1,613.0	-1,334.1	1,320.1	1,246.0	17.809		
11,900.0	10,372.2	11,868.7	10,343.5	38.5	38.5	-88.71	1,713.0	-1,335.0	1,320.1	1,243.1	17.142		
12,000.0	10,371.5	11,968.7	10,342.9	40.0	40.0	-88.72	1,813.0	-1,335.9	1,320.1	1,240.2	16.511		
12,100.0	10,370.9	12,068.7	10,342.4	41.5	41.5	-88.72	1,913.0	-1,336.8	1,320.1	1,237.2	15.913		
12,200.0	10,370.3	12,168.7	10,341.9	43.0	43.0	-88.72	2,013.0	-1,337.7	1,320.1	1,234.1	15.349		
12,300.0	10,369.6	12,268.7	10,341.4	44.6	44.5	-88.73	2,113.0	-1,338.6	1,320.1	1,231.0	14.815		
12,400.0	10,369.0	12,368.7	10,340.8	46.2	46.1	-88.73	2,213.0	-1,339.5	1,320.1	1,227.9	14.311		
12,500.0	10,368.4	12,468.7	10,340.3	47.7	47.7	-88.74	2,313.0	-1,340.3	1,320.1	1,224.7	13.835		
12,600.0	10,367.8	12,568.7	10,339.8	49.3	49.3	-88.74	2,413.0	-1,341.2	1,320.1	1,221.5	13.386		
12,700.0	10,367.1	12,668.7	10,339.3	51.0	50.9	-88.75	2,512.9	-1,342.1	1,320.1	1,218.3	12.960		
12,800.0	10,366.5	12,768.7	10,338.8	52.6	52.5	-88.75	2,612.9	-1,343.0	1,320.1	1,215.0	12.558		

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 #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
Sec 27, T22S, R34E - Squints Federal Com #8H - Wellbore #1 - Design #1												Offset Well Error:	0.0 usft
Survey Program: 0-MWD default													
Measured Depth (usft)	Reference Vertical Depth (usft)	Measured Depth (usft)	Offset 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	
12,900.0	10,365.9	12,868.7	10,338.2	54.2	54.2	-88.76	2,712.9	-1,343.9	1,320.1	1,211.7	12.177		
13,000.0	10,365.3	12,968.7	10,337.7	55.9	55.8	-88.76	2,812.9	-1,344.8	1,320.1	1,208.4	11.817		
13,100.0	10,364.6	13,068.7	10,337.2	57.6	57.5	-88.77	2,912.9	-1,345.7	1,320.1	1,205.1	11.474		
13,200.0	10,364.0	13,168.7	10,336.7	59.2	59.2	-88.77	3,012.9	-1,346.6	1,320.1	1,201.7	11.150		
13,300.0	10,363.4	13,268.7	10,336.1	60.9	60.9	-88.77	3,112.9	-1,347.5	1,320.1	1,198.3	10.842		
13,400.0	10,362.7	13,368.7	10,335.6	62.6	62.6	-88.78	3,212.9	-1,348.3	1,320.1	1,195.0	10.549		
13,500.0	10,362.1	13,468.7	10,335.1	64.3	64.3	-88.78	3,312.9	-1,349.2	1,320.1	1,191.6	10.270		
13,600.0	10,361.5	13,568.7	10,334.6	66.0	66.0	-88.79	3,412.9	-1,350.1	1,320.1	1,188.2	10.005		
13,700.0	10,360.9	13,668.7	10,334.1	67.7	67.7	-88.79	3,512.9	-1,351.0	1,320.1	1,184.7	9.752		
13,800.0	10,360.2	13,768.7	10,333.5	69.4	69.4	-88.80	3,612.9	-1,351.9	1,320.1	1,181.3	9.510		
13,900.0	10,359.6	13,868.7	10,333.0	71.2	71.1	-88.80	3,712.9	-1,352.8	1,320.1	1,177.9	9.280		
14,000.0	10,359.0	13,968.7	10,332.5	72.9	72.8	-88.81	3,812.9	-1,353.7	1,320.1	1,174.4	9.060		
14,099.6	10,358.4	14,068.3	10,332.0	74.6	74.6	-88.81	3,912.5	-1,354.6	1,320.1	1,171.0	8.850		
14,100.0	10,358.4	14,068.7	10,332.0	74.6	74.6	-88.81	3,912.9	-1,354.6	1,320.1	1,170.9	8.850		
14,200.0	10,357.7	14,168.7	10,331.4	76.4	76.3	-88.82	4,012.9	-1,355.4	1,320.1	1,167.5	8.648		
14,300.0	10,357.1	14,268.7	10,330.9	78.1	78.1	-88.82	4,112.9	-1,356.3	1,320.1	1,164.0	8.456		
14,400.0	10,356.5	14,368.7	10,330.4	79.8	79.8	-88.82	4,212.9	-1,357.2	1,320.1	1,160.5	8.271		
14,500.0	10,355.8	14,468.7	10,329.9	81.6	81.5	-88.83	4,312.9	-1,358.1	1,320.1	1,157.0	8.094		
14,600.0	10,355.2	14,568.7	10,329.3	83.3	83.3	-88.83	4,412.8	-1,359.0	1,320.1	1,153.5	7.923		
14,700.0	10,354.6	14,668.7	10,328.8	85.1	85.1	-88.84	4,512.8	-1,359.9	1,320.1	1,150.0	7.760		
14,800.0	10,354.0	14,768.7	10,328.3	86.9	86.8	-88.84	4,612.8	-1,360.8	1,320.1	1,146.5	7.603		
14,900.0	10,353.3	14,868.7	10,327.8	88.6	88.6	-88.85	4,712.8	-1,361.7	1,320.1	1,143.0	7.452		
15,000.0	10,352.7	14,968.7	10,327.3	90.4	90.3	-88.85	4,812.8	-1,362.6	1,320.1	1,139.4	7.307		
15,100.0	10,352.1	15,068.7	10,326.7	92.1	92.1	-88.86	4,912.8	-1,363.4	1,320.1	1,135.9	7.167		
15,200.0	10,351.5	15,168.7	10,326.2	93.9	93.9	-88.86	5,012.8	-1,364.3	1,320.1	1,132.4	7.032		
15,300.0	10,350.8	15,268.7	10,325.7	95.7	95.6	-88.87	5,112.8	-1,365.2	1,320.1	1,128.8	6.902		
15,400.0	10,350.2	15,368.7	10,325.2	97.4	97.4	-88.87	5,212.8	-1,366.1	1,320.1	1,125.3	6.776		
15,500.0	10,349.6	15,468.7	10,324.6	99.2	99.2	-88.87	5,312.8	-1,367.0	1,320.1	1,121.8	6.655		
15,600.0	10,349.0	15,568.7	10,324.1	101.0	101.0	-88.88	5,412.8	-1,367.9	1,320.1	1,118.2	6.538		
15,700.0	10,348.3	15,668.7	10,323.6	102.8	102.7	-88.88	5,512.8	-1,368.8	1,320.1	1,114.6	6.425		
15,800.0	10,347.7	15,768.7	10,323.1	104.5	104.5	-88.89	5,612.8	-1,369.7	1,320.1	1,111.1	6.316		
15,900.0	10,347.1	15,868.7	10,322.6	106.3	106.3	-88.89	5,712.8	-1,370.6	1,320.1	1,107.5	6.210		
16,000.0	10,346.4	15,968.7	10,322.0	108.1	108.1	-88.90	5,812.8	-1,371.4	1,320.1	1,104.0	6.108		
16,100.0	10,345.8	16,068.7	10,321.5	109.9	109.9	-88.90	5,912.8	-1,372.3	1,320.1	1,100.4	6.009		
16,200.0	10,345.2	16,168.7	10,321.0	111.7	111.6	-88.91	6,012.8	-1,373.2	1,320.1	1,096.8	5.913		
16,300.0	10,344.6	16,268.7	10,320.5	113.5	113.4	-88.91	6,112.8	-1,374.1	1,320.1	1,093.3	5.819		
16,400.0	10,343.9	16,368.7	10,319.9	115.2	115.2	-88.92	6,212.8	-1,375.0	1,320.1	1,089.7	5.729		
16,500.0	10,343.3	16,468.7	10,319.4	117.0	117.0	-88.92	6,312.7	-1,375.9	1,320.1	1,086.1	5.642		
16,600.0	10,342.7	16,568.7	10,318.9	118.8	118.8	-88.92	6,412.7	-1,376.8	1,320.1	1,082.5	5.557		
16,700.0	10,342.1	16,668.7	10,318.4	120.6	120.6	-88.93	6,512.7	-1,377.7	1,320.1	1,079.0	5.474		
16,800.0	10,341.4	16,768.7	10,317.9	122.4	122.4	-88.93	6,612.7	-1,378.5	1,320.1	1,075.4	5.394		
16,900.0	10,340.8	16,868.7	10,317.3	124.2	124.2	-88.94	6,712.7	-1,379.4	1,320.1	1,071.8	5.316		
17,000.0	10,340.2	16,968.7	10,316.8	126.0	126.0	-88.94	6,812.7	-1,380.3	1,320.1	1,068.2	5.241		
17,100.0	10,339.5	17,068.7	10,316.3	127.8	127.7	-88.95	6,912.7	-1,381.2	1,320.1	1,064.6	5.167		
17,200.0	10,338.9	17,168.7	10,315.8	129.6	129.5	-88.95	7,012.7	-1,382.1	1,320.1	1,061.0	5.095		
17,300.0	10,338.3	17,268.7	10,315.2	131.4	131.3	-88.96	7,112.7	-1,383.0	1,320.1	1,057.5	5.026		
17,400.0	10,337.7	17,368.7	10,314.7	133.2	133.1	-88.96	7,212.7	-1,383.9	1,320.1	1,053.9	4.958		
17,500.0	10,337.0	17,468.7	10,314.2	135.0	134.9	-88.97	7,312.7	-1,384.8	1,320.1	1,050.3	4.892		
17,600.0	10,336.4	17,568.7	10,313.7	136.8	136.7	-88.97	7,412.7	-1,385.7	1,320.1	1,046.7	4.828		
17,700.0	10,335.8	17,668.7	10,313.1	138.6	138.5	-88.97	7,512.7	-1,386.5	1,320.1	1,043.1	4.765		
17,800.0	10,335.2	17,768.7	10,312.6	140.4	140.3	-88.98	7,612.7	-1,387.4	1,320.1	1,039.5	4.704		
17,900.0	10,334.5	17,868.7	10,312.1	142.2	142.1	-88.98	7,712.7	-1,388.3	1,320.1	1,035.9	4.644		

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 #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore:	Wellbore #1	Database:	Compass
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset-Design Sec 27, T22S, R34E - Squints Federal Com #8H - Wellbore #1 - Design #1											Offset Site Error:	0.0 usft
Survey Program: 0-MWD default											Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning
18,000.0	10,333.9	17,968.7	10,311.6	144.0	143.9	-88.99	7,812.7	-1,389.2	1,320.1	1,032.3	4.586	
18,100.0	10,333.3	18,068.7	10,311.1	145.8	145.7	-88.99	7,912.7	-1,390.1	1,320.1	1,028.7	4.530	
18,200.0	10,332.6	18,168.7	10,310.5	147.6	147.5	-89.00	8,012.7	-1,391.0	1,320.1	1,025.1	4.474	
18,300.0	10,332.0	18,268.7	10,310.0	149.4	149.3	-89.00	8,112.6	-1,391.9	1,320.1	1,021.5	4.420	
18,400.0	10,331.4	18,368.7	10,309.5	151.2	151.1	-89.01	8,212.6	-1,392.8	1,320.1	1,017.9	4.368	
18,500.0	10,330.8	18,468.7	10,309.0	153.0	152.9	-89.01	8,312.6	-1,393.7	1,320.1	1,014.3	4.316	
18,600.0	10,330.1	18,568.7	10,308.4	154.8	154.7	-89.01	8,412.6	-1,394.5	1,320.1	1,010.7	4.266	
18,700.0	10,329.5	18,668.7	10,307.9	156.6	156.5	-89.02	8,512.6	-1,395.4	1,320.1	1,007.0	4.217	
18,800.0	10,328.9	18,768.7	10,307.4	158.4	158.3	-89.02	8,612.6	-1,396.3	1,320.1	1,003.4	4.169	
18,900.0	10,328.3	18,868.7	10,306.9	160.2	160.2	-89.03	8,712.6	-1,397.2	1,320.1	999.8	4.122	
19,000.0	10,327.6	18,968.7	10,306.4	162.0	162.0	-89.03	8,812.6	-1,398.1	1,320.1	996.2	4.076	
19,100.0	10,327.0	19,068.7	10,305.8	163.8	163.8	-89.04	8,912.6	-1,399.0	1,320.1	992.6	4.031	
19,200.0	10,326.4	19,168.7	10,305.3	165.6	165.6	-89.04	9,012.6	-1,399.9	1,320.1	989.0	3.987	
19,300.0	10,325.8	19,268.7	10,304.8	167.4	167.4	-89.05	9,112.6	-1,400.8	1,320.1	985.4	3.944	
19,400.0	10,325.1	19,368.7	10,304.3	169.2	169.2	-89.05	9,212.6	-1,401.6	1,320.1	981.8	3.902	
19,500.0	10,324.5	19,468.7	10,303.7	171.0	171.0	-89.06	9,312.6	-1,402.5	1,320.1	978.2	3.860	
19,600.0	10,323.9	19,568.7	10,303.2	172.8	172.8	-89.06	9,412.6	-1,403.4	1,320.1	974.5	3.820	
19,700.0	10,323.2	19,668.7	10,302.7	174.6	174.6	-89.06	9,512.6	-1,404.3	1,320.1	970.9	3.780	
19,800.0	10,322.6	19,768.7	10,302.2	176.4	176.4	-89.07	9,612.6	-1,405.2	1,320.1	967.3	3.742	
19,900.0	10,322.0	19,868.7	10,301.7	178.3	178.2	-89.07	9,712.6	-1,406.1	1,320.1	963.7	3.704	
20,000.0	10,321.4	19,968.7	10,301.1	180.1	180.0	-89.08	9,812.6	-1,407.0	1,320.1	960.1	3.666	
20,100.0	10,320.7	20,068.7	10,300.6	181.9	181.8	-89.08	9,912.6	-1,407.9	1,320.1	956.5	3.630	
20,200.0	10,320.1	20,168.7	10,300.1	183.7	183.7	-89.09	10,012.5	-1,408.8	1,320.1	952.8	3.594	
20,205.5	10,320.1	20,174.2	10,300.1	183.8	183.8	-89.09	10,018.1	-1,408.8	1,320.1	952.6	3.592	
20,217.1	10,320.0	20,185.1	10,300.0	184.0	183.9	-89.09	10,028.9	-1,408.9	1,320.1	952.2	3.588 ES, SF	



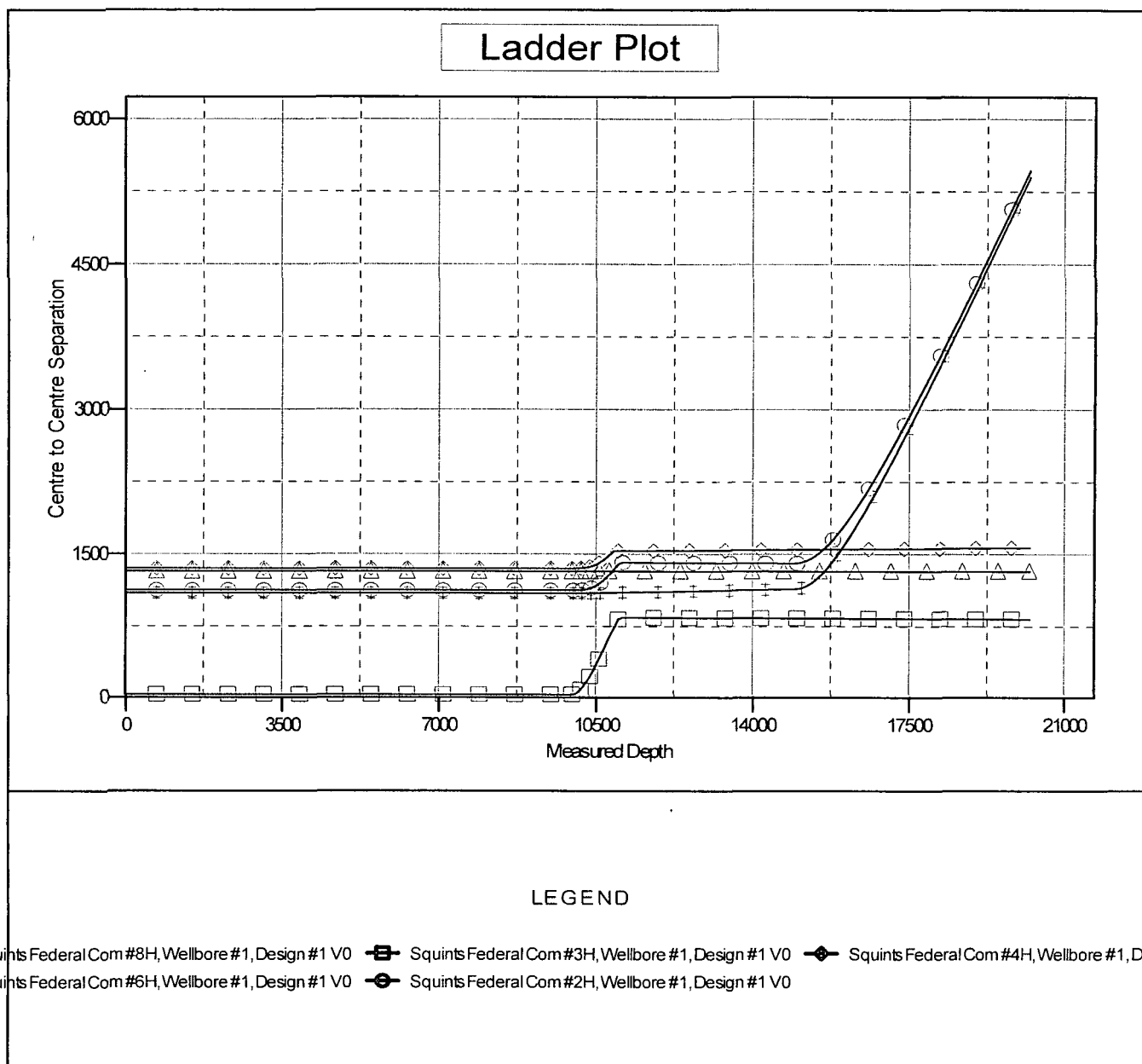
HP Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	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 @ 3435.0usft (Ensign #772)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Squints Federal Com #7H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.47°





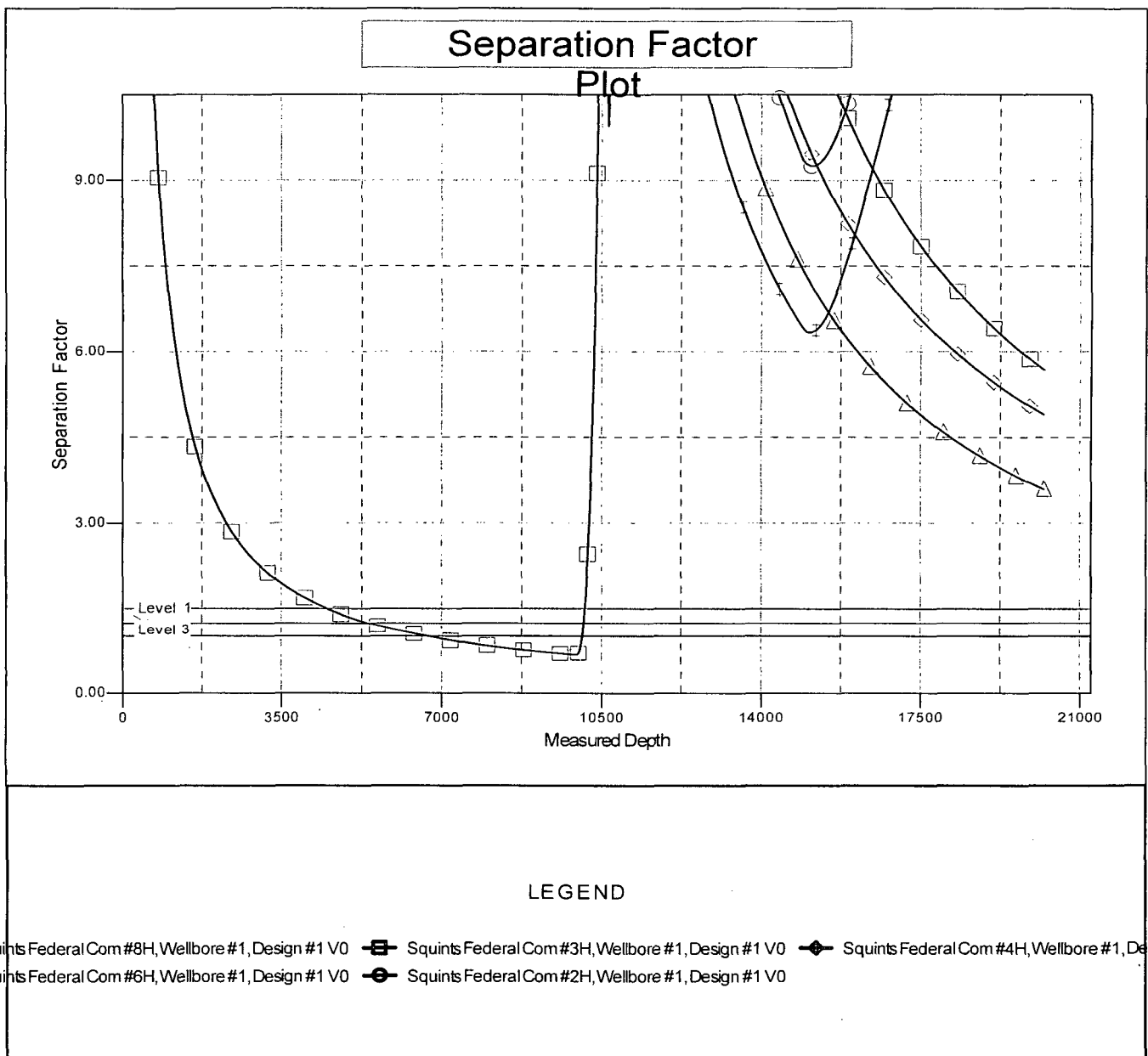
HP
Anticollision Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints Federal Com #7H	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

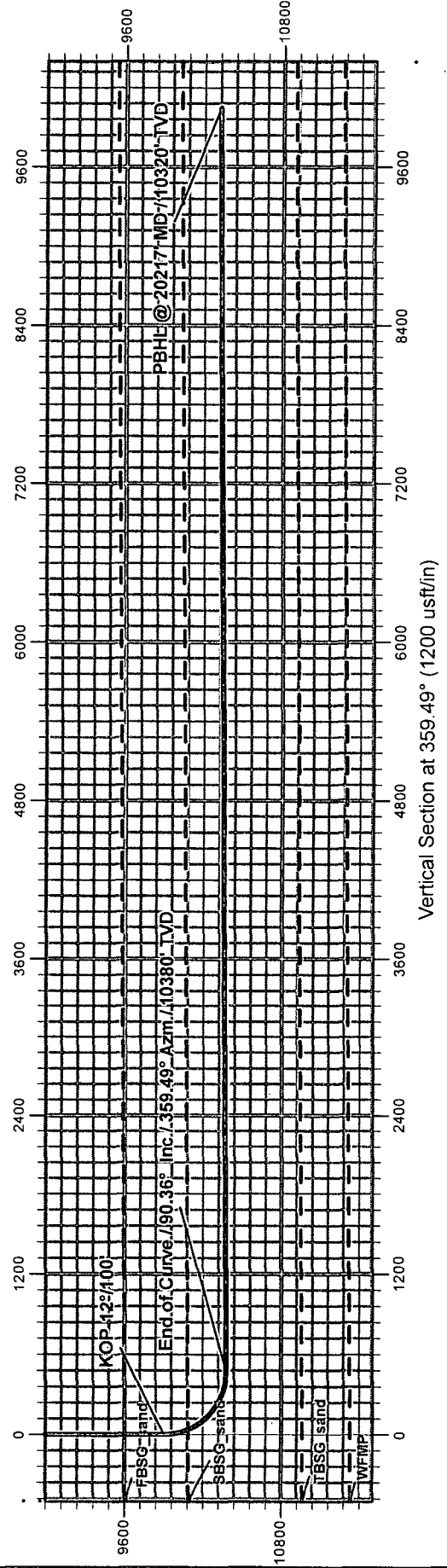
Reference Depths are relative to Well @ 3435.0usft (Ensign #772)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Squints Federal Com #7H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.47°

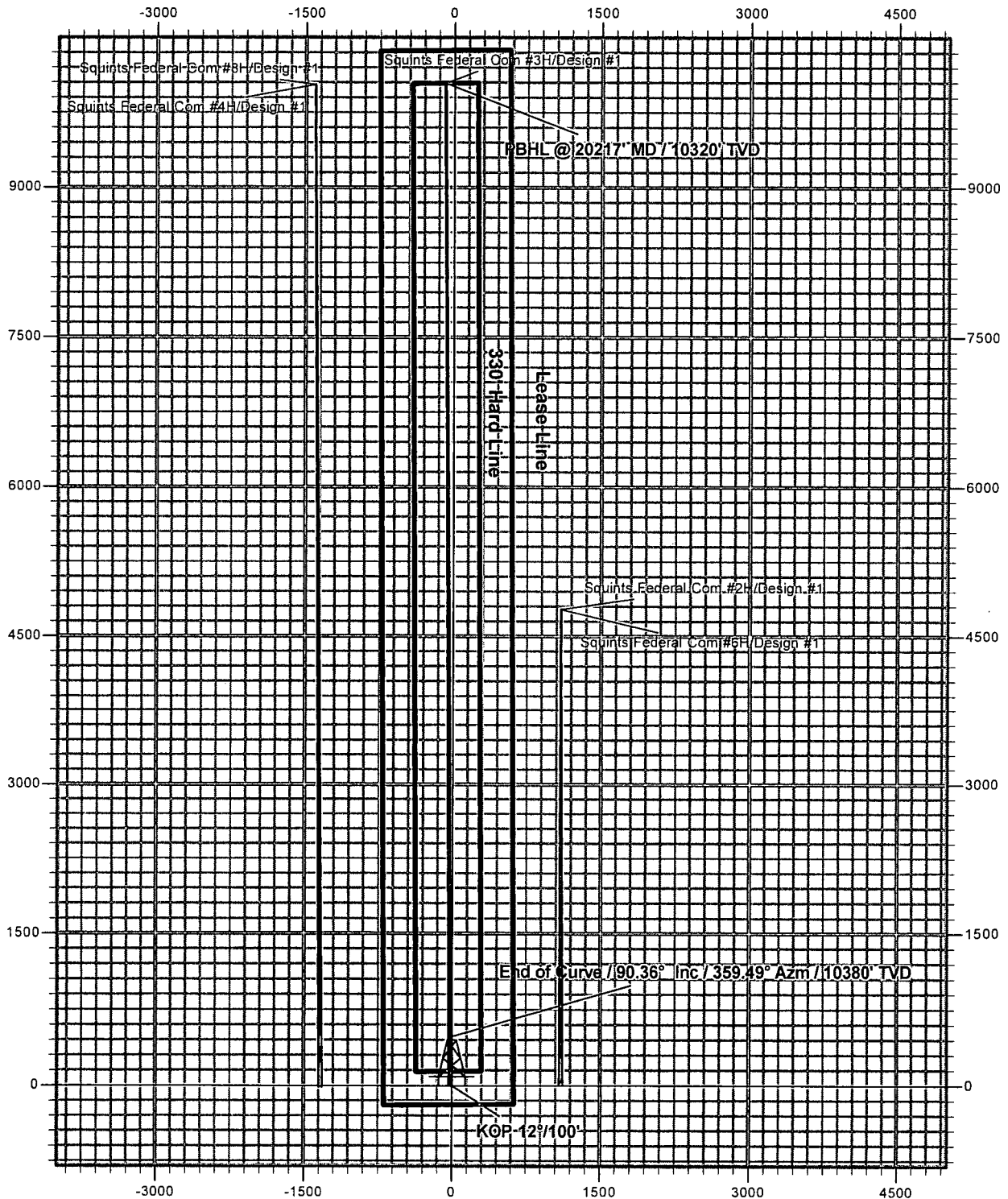




Lea County, NM
Sec 27, T22S, R34E
Squints Federal Com #7H
Design #1



Lea County, NM
 Sec 27, T22S, R34E
 Squints Federal Com #7H
 Design #1



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

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

Technip

TECHNIP Umbilicals Inc.
COFLEXIP® Products Division

Quality Control Department

Control Report Dated 4/28/2015

COFLEXIP FLEXIBLE PIPE TEST CERTIFICATE

Customer OFS CANADA INC
Job Number K12387
Address
Line Serial Number K12387-202
Part Number 076 60414 13 13

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

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

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

[Signature]
TECHNIP
QUALITY CONTROL

THIRD PARTY INSPECTION FIRM OR CUSTOMER REPRESENTATIVE

Test Configuration 12 Zone

Production Information Input

Customer ID
OPS 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

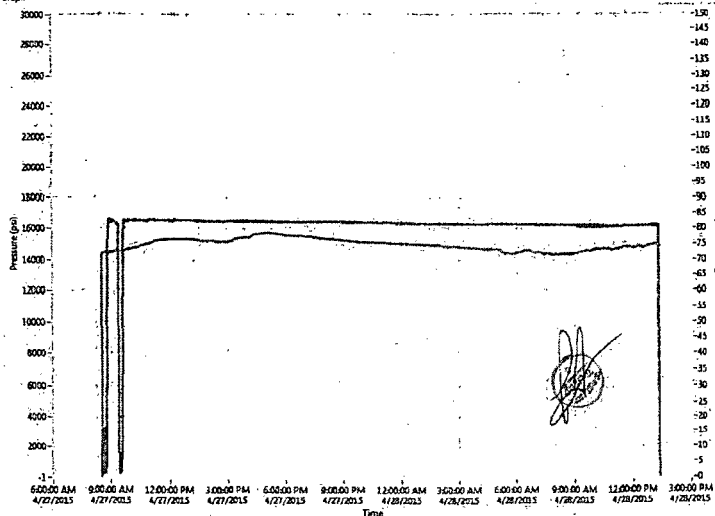
Pressure Transducer S/N
1251590
Stable Press
16500
Calib. Due
9/9/2015 8:29:12 AM
Temperature S/N
T31A
Test Press
15000
Pressure Range
0 - 30000

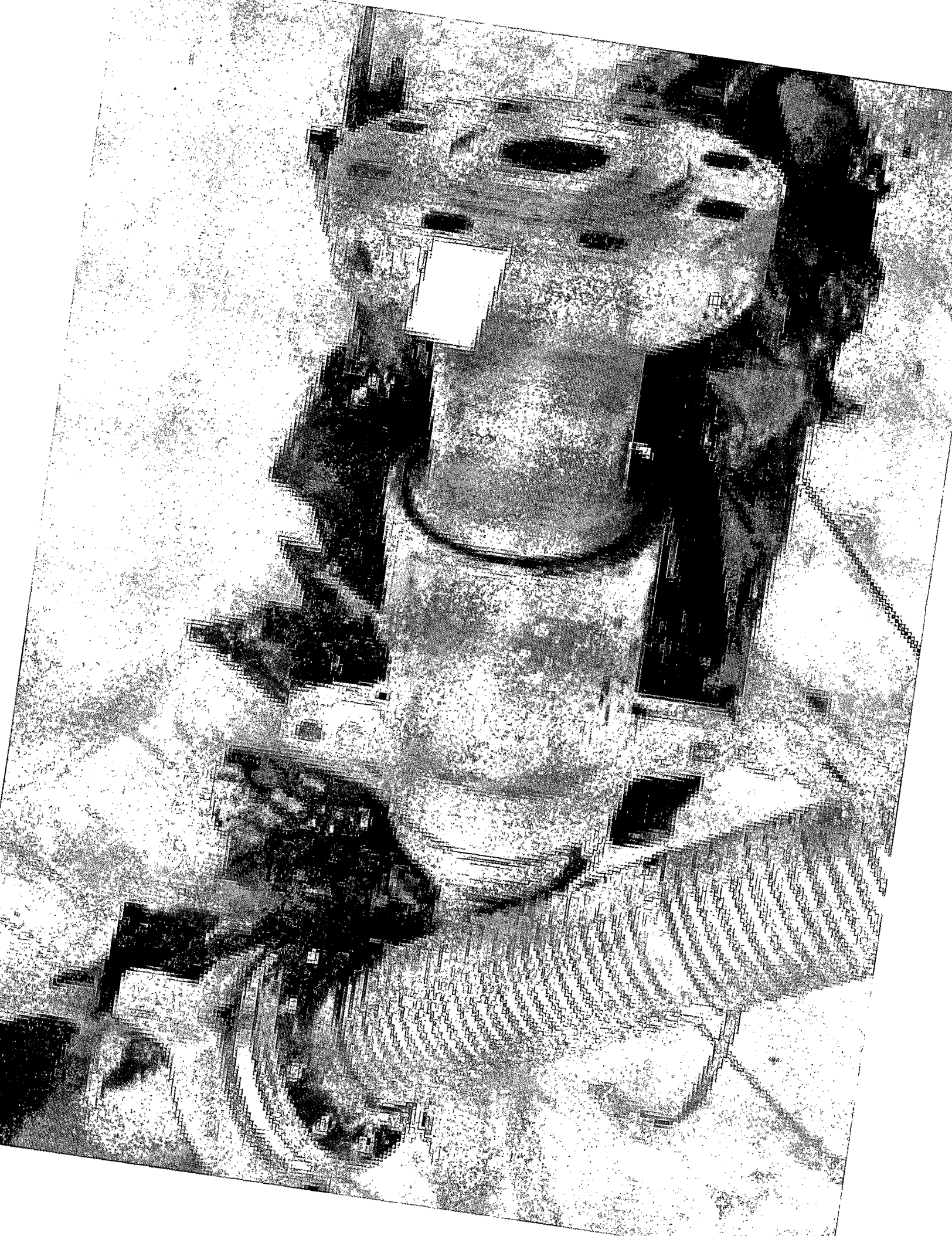
Station 04

Calibration

Raw Minimum
0.000000
Raw Maximum
0.020000
Eng. Minimum
0.000000
Eng. Maximum
30000.000000

XY Graph





USA K12387

000017/15

TEMP

CHON

PH

