

HOBBS OGD

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	Reference	Offset	Distance		Separation	Warning	
	Measured	Measured	Between	Between			
Offset Well - Wellbore - Design	Depth	Depth	Centres	Ellipses	Factor		
	(usft)	(usft)	(usft)	(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)	Distance 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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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)	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	
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



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	Vertical	Offset	Vertical	Semi Major Axis	Offset	Highside	Offset Wellbore Centre	Distance	Distance	Separation	Warning		
Measured Depth (usft)	Depth (usft)	Depth (usft)	Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Factor		
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											Offset Site Error: 0.0 usft	
Sec 27, T22S, R34E - Squints Federal Com #2H - Wellbore #1 - Design #1											Offset Well Error: 0.0 usft	
Survey Program: 0-MWD default												
Reference	Vertical	Offset	Vertical	Semi Major Axis	Offset	Highside	Offset Wellbore Centre	Distance	Between	Separation	Warning	
Measured	Depth	Measured	Depth	Reference		Toolface	+N/-S	+E/-W	Centres	Ellipses		
Depth	(usft)	Depth	(usft)	(usft)	(usft)	(°)	(usft)	(usft)	(usft)	(usft)	Factor	
(usft)												
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 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 #2H - Wellbore #1 - Design #1											Offset Well Error:	0.0 usft
Survey Program: 0-MWD default												
Reference	Offset	Semi Major Axis		Distance		Separation		Warning				
Measured	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre	Between	Between	Factor		
Depth	Depth	Depth	Depth	(usft)	(usft)	Tooface	+N-S	Centres	Ellipses			
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	(usft)	(usft)	(usft)			
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)	Distance 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)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning	
0.0	0.0	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	Vertical	Offset	Reference	Offset	Highside	Offset Wellbore	Distance	Distance	Separation	Warning		
Depth	Depth	Depth	Depth	Depth	Depth	Tooface	+N-S	Between	Between	Factor			
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(")	(usft)	Centres	Ellipses				
								(usft)	(usft)				
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 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 #3H - Wellbore #1 - Design #1												0.0 usft
Survey Program: 0-MWD default												Offset Well Error:
												0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	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)	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
Survey Program: 0-MVD default												Offset Well Error:	0.0 usft
Sec 27, T22S, R34E - Squints Federal Com #3H - Wellbore #1 - Design #1													
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	Offset Wellbore Centre +E-W (usft)	Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)				Between Centres (usft)	Between Ellipses (usft)			
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:	0.0 usft
Survey Program: 0-MWD default											Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
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												Offset Site Error:	0.0 usft
Survey Program: 0-MWD default												Offset Well Error:	0.0 usft
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning	
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		

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)	Distance Between Centres (usft)	Distance 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: 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)	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: 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	Vertical	Offset	Semi-Major Axis	Reference	Offset	Highside	Offset Wellbore Centre	Distance	Distance	Separation	Warning
Depth	Depth	Depth	Depth	Reference	Offset	Offset	Toolface	+N/S	Between	Between	Factor	
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	(usft)	Centres	Ellipses		
								(usft)	(usft)	(usft)		
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)	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	5,203.0	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	24.578		
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)	+E/-W (usft)	Distance Between Centres (usft)	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 (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
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)	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:	
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)	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	-10.6	-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		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	Between Centres (usft)			Between Ellipses (usft)	
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
Survey Program: 0-MWD default											Offset Well Error:	0.0 usft
Reference	Vertical	Measured	Vertical	Semi Major Axis	Offset	Highside	Offset Wellbore Centre	Distance	Between	Separation	Warning	
Measured	Depth	Depth	Depth	Reference		Toolface	+N/-S	+E/-W	Centres	Ellipses		
Depth	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	(usft)	(usft)	(usft)	Factor		
(usft)												
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)		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

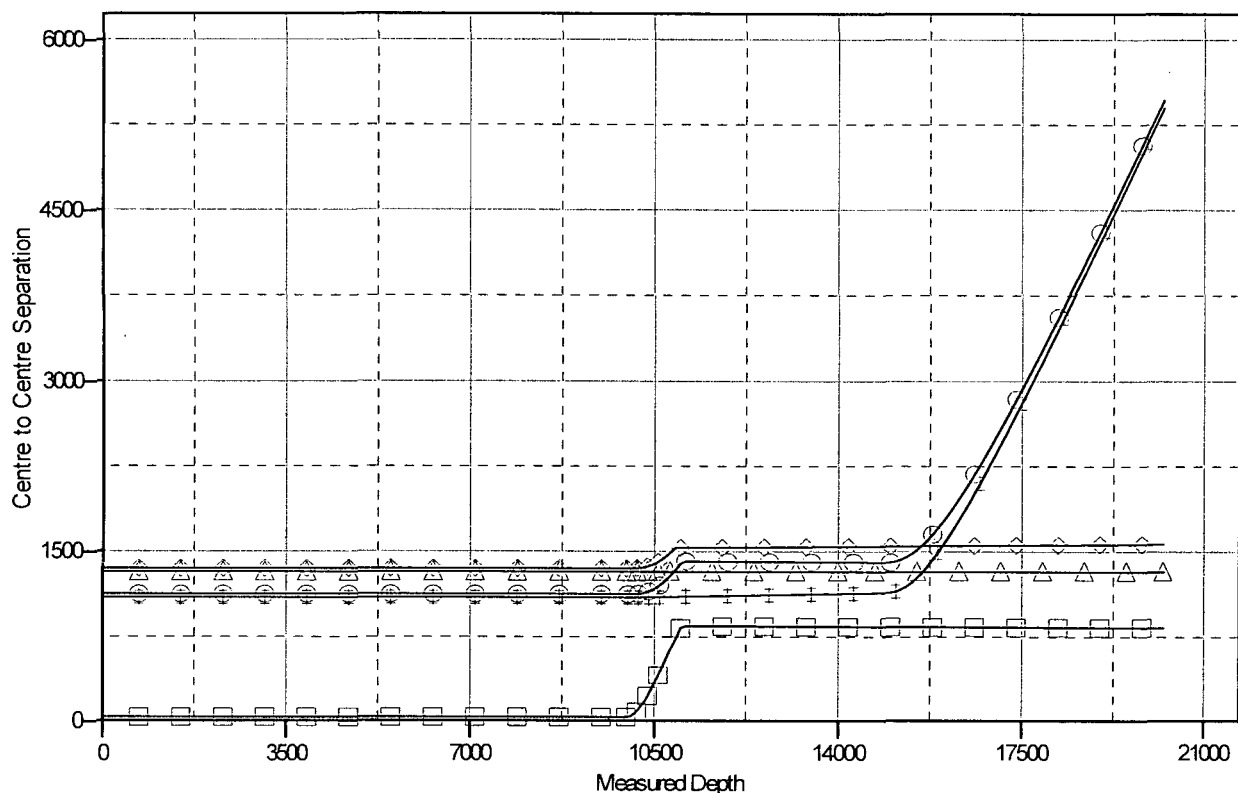


Company:	COG Operating, LLC	Local Co-ordinate Reference:	Well Squints Federal Com #7H
Project:	Lea County, NM	TVD Reference:	Well @ 3435.0usft (Ensign #772)
Reference Site:	Sec 27, T22S, R34E	MD Reference:	Well @ 3435.0usft (Ensign #772)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Squints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

Ladder Plot



LEGEND

Squints Federal Com #8H, Wellbore #1, Design #1 V0 Squints Federal Com #3H, Wellbore #1, Design #1 V0 Squints Federal Com #4H, Wellbore #1, Design #1 V0
 Squints Federal Com #6H, Wellbore #1, Design #1 V0 Squints Federal Com #2H, Wellbore #1, Design #1 V0



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)

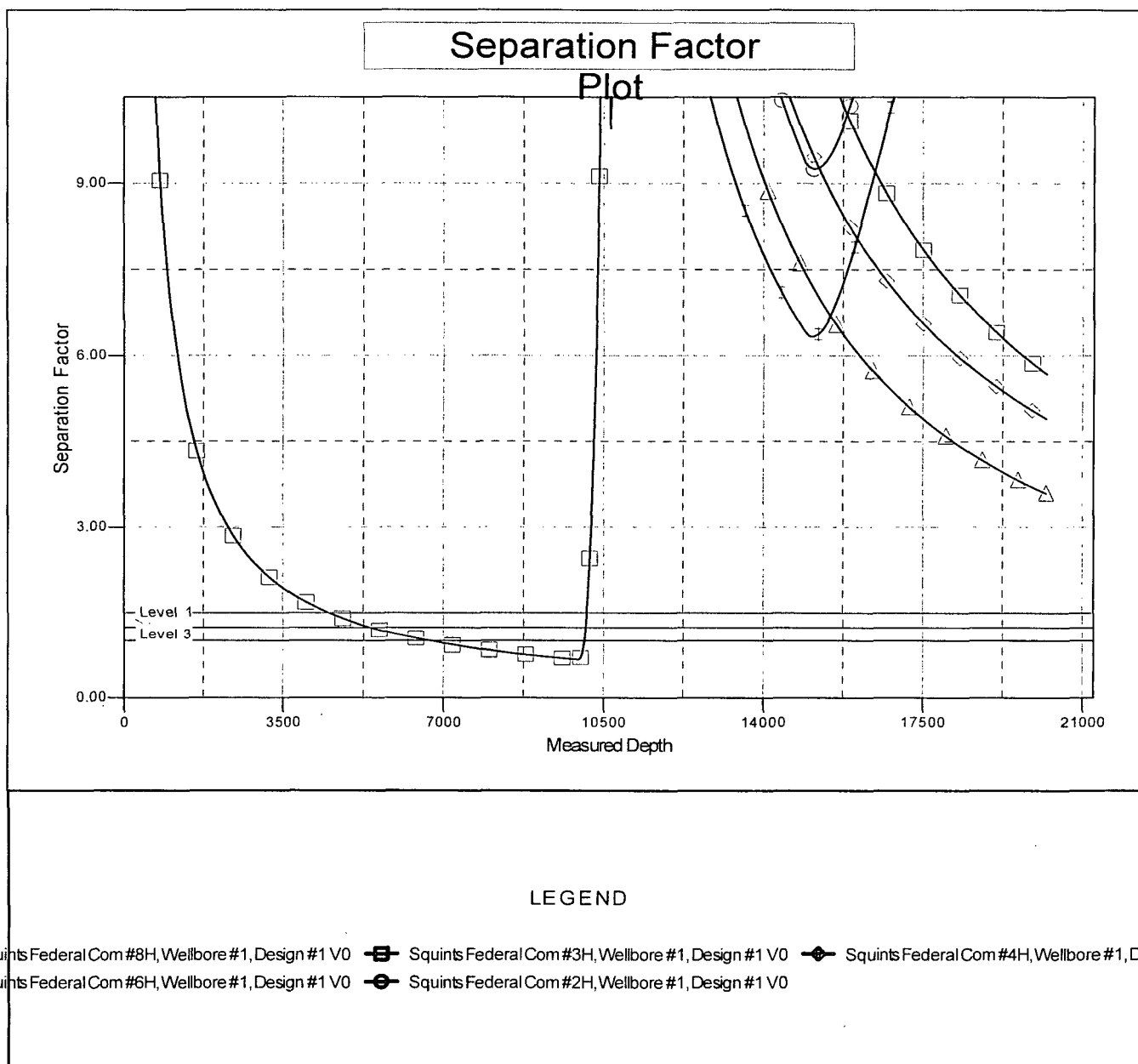
Offset Depths are relative to Offset Datum

Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Squints Federal Com #7H

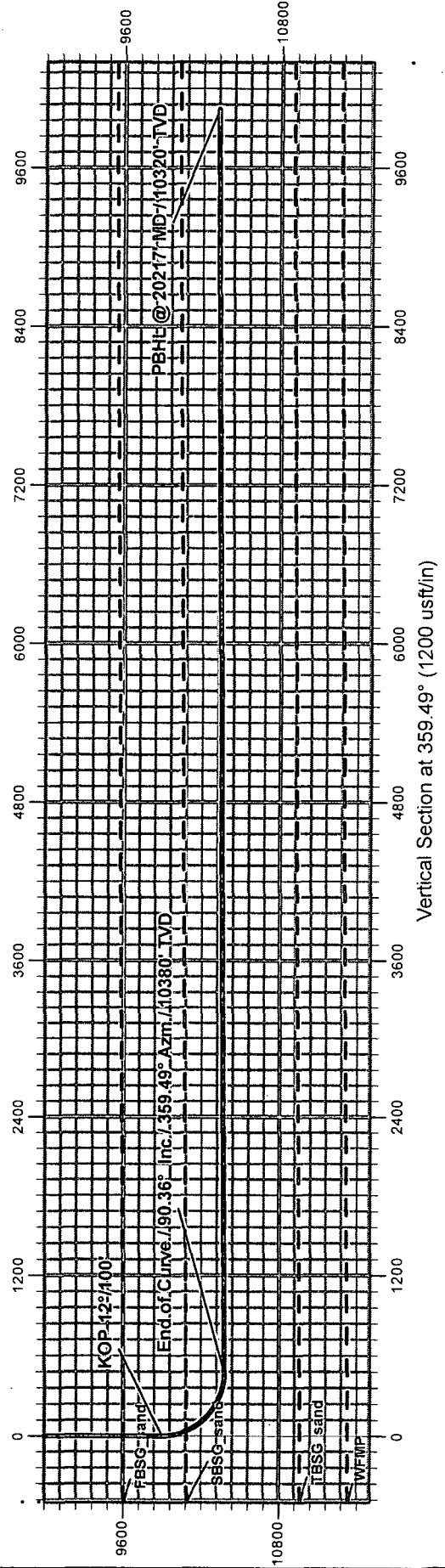
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30

Grid Convergence at Surface is: 0.47°

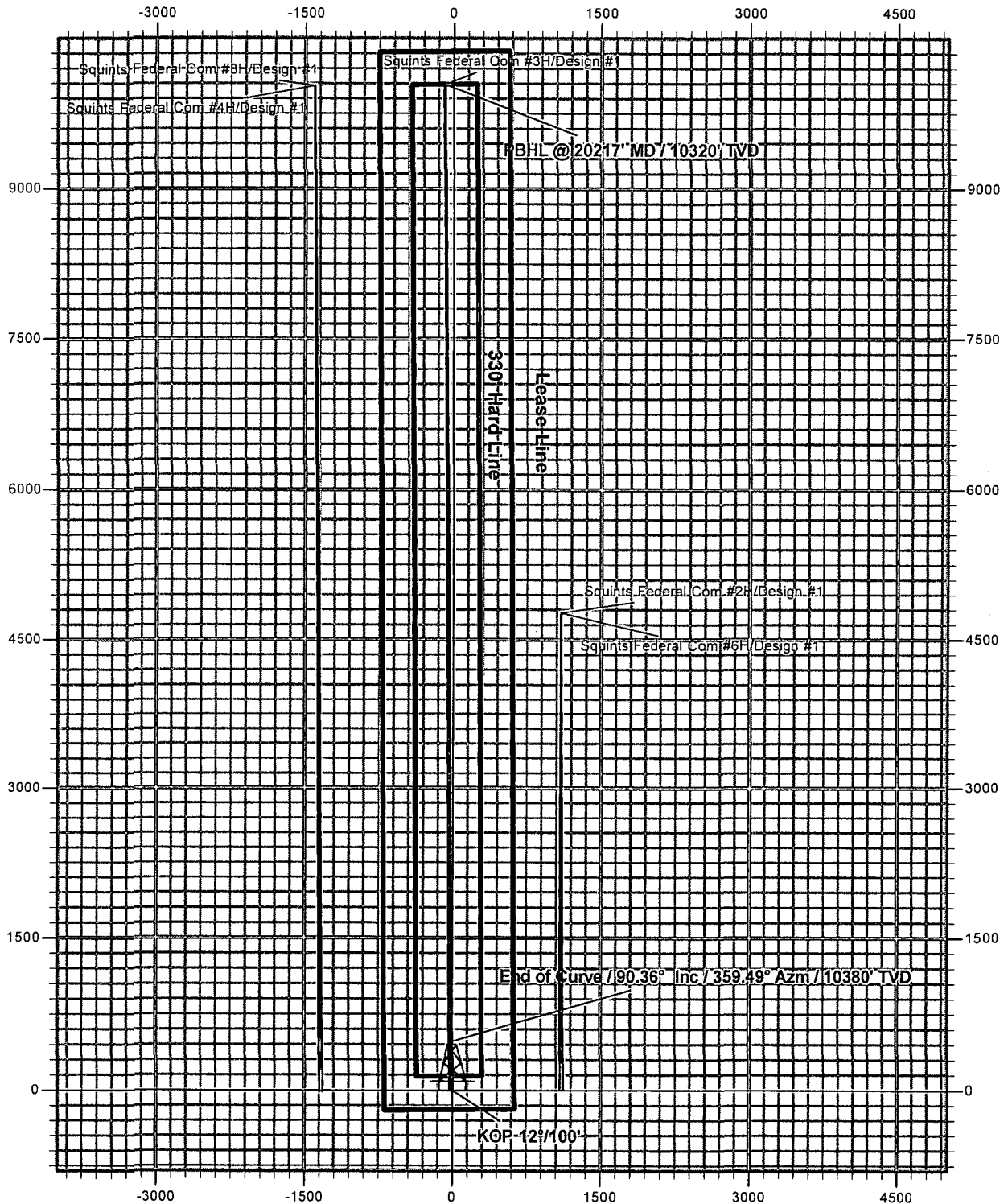




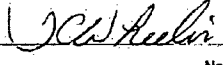
Lea County, NM
Sec 27, T22S, R34E
Squints Federal Com #7H
Design #1



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 QFS 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	Technician
KI2386-202@KI2387-202	ROY

QC Information Input

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

Station Information

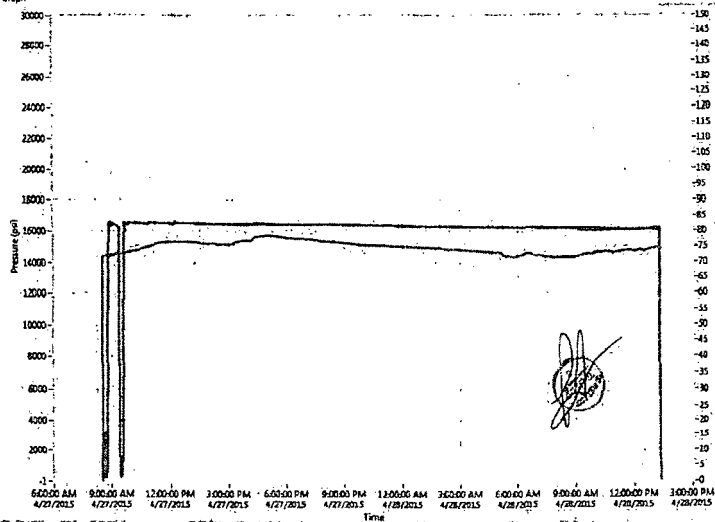
Pressure Transducer S/N	Temperature S/N
1231570	T13A
Stable Press	Test Press
16500	15000
Cal. Due	Pressure Range
9/9/2015 8:29:12 AM	0 - 30000

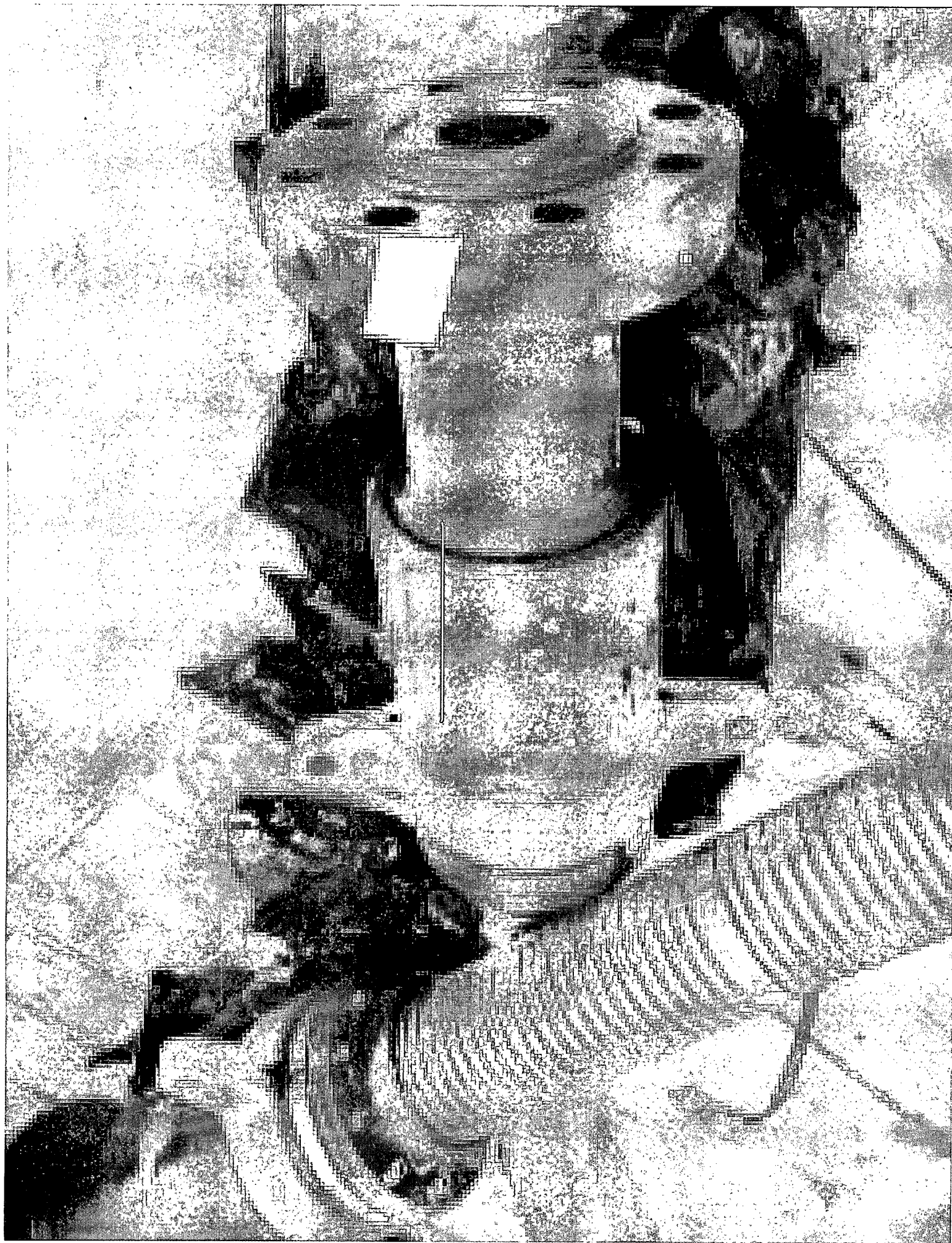
Station 04

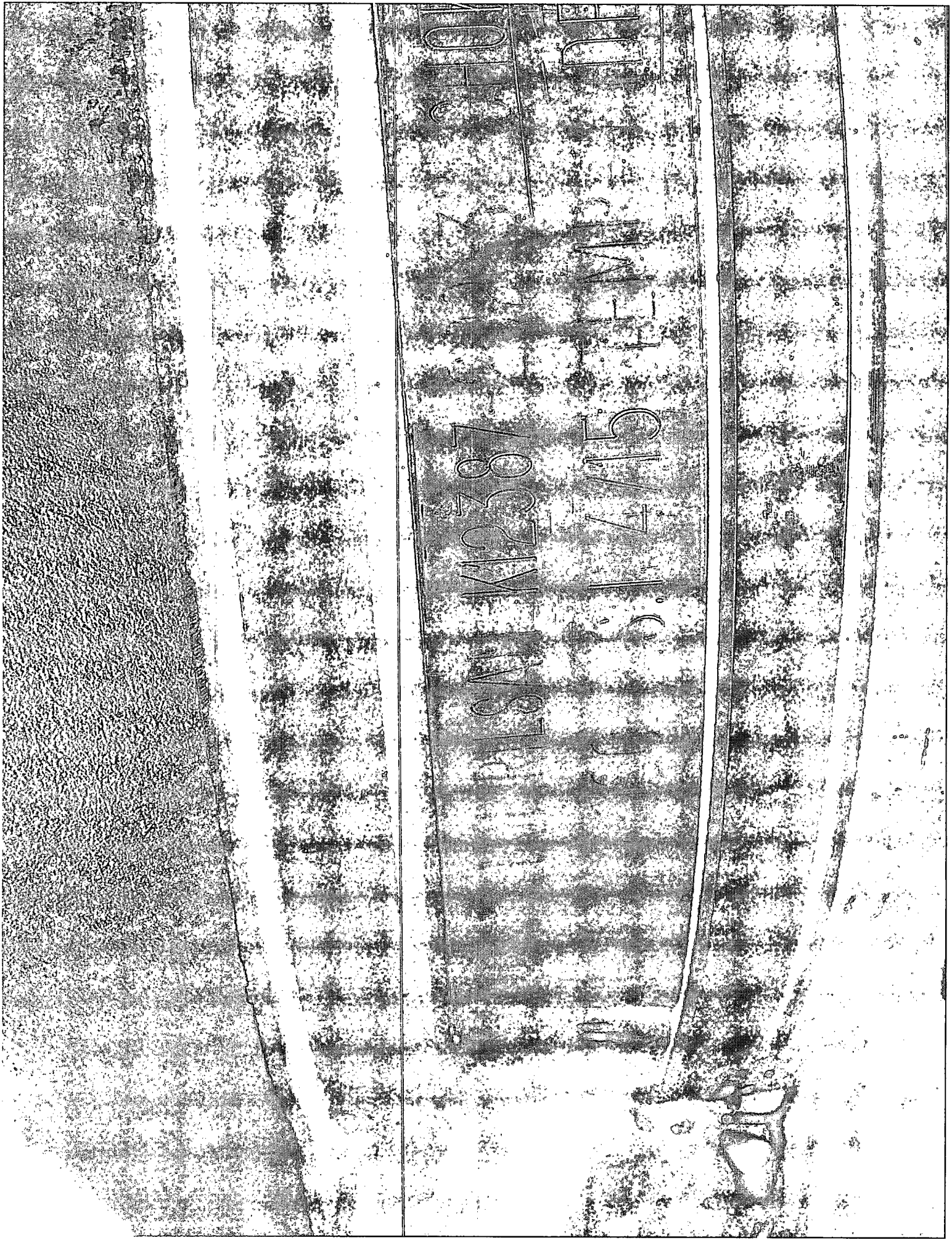
Calibration

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

XY Graph







LSA-K12387

51/7

7/15

FEM

