



Extraction Oil & Gas

Weld Co., Co

Sec.08-T07N-R66W

Thornton 3

Original Hole

Rev 0

Anticollision Risk Report

21 June, 2014



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Reference	Rev 0		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations Interval 1.00usft	Error Model:	ISCSWA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 25,000.00usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Risk Settings	
Vertical Depth for Analysis:	usft (Below TVD Reference Datum)
Level of Acceptable Risk (1 in):	
Minimum Separation:	0 usft

Survey Tool Program	Date	6/21/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	17,582.23	Rev 0 (Original Hole)	Pathfinder	Pathfinder MWD

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance		Separation Factor	Warning
Offset Well - Wellbore - Design			Between Centres (usft)	Between Ellipses (usft)		
Sec.08-T07N-R66W						
Thornton 1 - Original Hole - Rev 0	500.00	500.00	55.75	54.06	32.999 CC, ES	
Thornton 1 - Original Hole - Rev 0	17,582.23	17,324.42	595.00	462.91	4.504 SF	
Thornton 10 - Original Hole - Rev 0	700.00	704.00	196.01	193.61	81.853 CC, ES	
Thornton 10 - Original Hole - Rev 0	17,582.23	17,244.60	1,522.01	1,376.36	10.450 SF	
Thornton 11 - Original Hole - Rev 0	664.91	669.91	224.06	221.79	98.537 CC	
Thornton 11 - Original Hole - Rev 0	700.00	704.69	224.06	221.67	93.523 ES	
Thornton 11 - Original Hole - Rev 0	17,582.23	17,280.97	1,845.59	1,699.02	12.592 SF	
Thornton 12 - Original Hole - Rev 0	564.54	570.54	252.11	250.19	130.952 CC	
Thornton 12 - Original Hole - Rev 0	600.00	605.57	252.12	250.07	123.088 ES	
Thornton 12 - Original Hole - Rev 0	17,582.23	17,632.75	1,980.01	1,831.38	13.321 SF	
Thornton 2 - Original Hole - Rev 0	600.00	600.00	27.69	25.65	13.581 CC, ES	
Thornton 2 - Original Hole - Rev 0	17,582.23	17,273.45	368.97	271.19	3.774 SF	
Thornton 4 - Original Hole - Rev 0	700.00	700.00	28.05	25.67	11.750 CC, ES	
Thornton 4 - Original Hole - Rev 0	17,582.23	17,241.25	368.96	273.44	3.863 SF	
Thornton 5 - Original Hole - Rev 0	700.00	701.00	56.10	53.71	23.480 CC, ES	
Thornton 5 - Original Hole - Rev 0	17,582.23	17,217.27	595.53	465.50	4.580 SF	
Thornton 6 - Original Hole - Rev 0	700.00	702.00	84.16	81.77	35.196 CC, ES	
Thornton 6 - Original Hole - Rev 0	17,582.23	17,541.77	660.11	511.64	4.446 SF	
Thornton 7 - Original Hole - Rev 0	700.00	702.00	112.21	109.82	46.929 CC, ES	
Thornton 7 - Original Hole - Rev 0	17,582.23	17,213.25	889.44	749.18	6.341 SF	
Thornton 8 - Original Hole - Rev 0	700.00	702.00	140.27	137.87	58.661 CC, ES	
Thornton 8 - Original Hole - Rev 0	17,582.23	17,219.47	1,201.95	1,058.00	8.350 SF	
Thornton 9 - Original Hole - Rev 0	700.00	703.00	167.95	165.56	70.190 CC, ES	
Thornton 9 - Original Hole - Rev 0	17,582.23	17,558.55	1,319.88	1,171.36	8.887 SF	

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



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Anticollision Risk Report

PATHFINDER
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Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risk Separation Factor	Probability of Collision		
0.00	0.00	0.00	0.00	0.00	0.00	0.13	55.75						CC, ES	0
100.00	100.00	100.00	100.00	0.15	0.15	0.13	55.75	55.46	0.29	190.136				0
200.00	200.00	200.00	200.00	0.32	0.32	0.13	55.75	55.11	0.64	86.801				0
300.00	300.00	300.00	300.00	0.50	0.50	0.13	55.75	54.76	0.99	56.237				0
400.00	400.00	400.00	400.00	0.67	0.67	0.13	55.75	54.41	1.34	41.592				0
500.00	500.00	500.00	500.00	0.84	0.84	0.13	55.75	54.06	1.69	32.999				0
600.00	600.00	598.20	598.18	1.02	1.02	-0.52	57.34	55.30	2.04	28.166				0
700.00	700.00	696.16	696.01	1.19	1.19	-2.26	62.13	59.75	2.38	26.077				0
800.00	799.98	793.82	793.31	1.37	1.36	29.29	68.69	65.96	2.73	25.183				0
900.00	899.84	891.26	890.04	1.54	1.54	28.31	75.46	72.39	3.07	24.558				0
1,000.00	999.45	988.46	986.09	1.72	1.72	27.91	82.42	79.00	3.42	24.111				0
1,100.00	1,098.70	1,085.42	1,081.36	1.90	1.90	27.96	89.53	85.76	3.76	23.783				0
1,161.05	1,159.06	1,144.51	1,139.08	2.01	2.02	28.17	93.94	89.96	3.98	23.623				0
1,200.00	1,197.51	1,182.14	1,175.71	2.08	2.09	28.31	97.01	92.90	4.12	23.574				0
1,300.00	1,296.22	1,281.32	1,271.99	2.27	2.29	28.48	105.94	101.46	4.48	23.660				0
1,400.00	1,394.92	1,380.92	1,368.67	2.45	2.49	28.61	114.89	110.05	4.84	23.730				0
1,500.00	1,493.63	1,480.51	1,465.35	2.64	2.70	28.72	123.85	118.64	5.21	23.787				0
1,600.00	1,592.34	1,580.11	1,562.03	2.83	2.90	28.82	132.81	127.23	5.57	23.832				0
1,700.00	1,691.05	1,679.71	1,658.71	3.02	3.11	28.90	141.76	135.82	5.94	23.870				0
1,800.00	1,789.76	1,779.31	1,755.39	3.21	3.32	28.98	150.72	144.41	6.31	23.901				0
1,900.00	1,888.46	1,878.90	1,852.07	3.40	3.53	29.05	159.68	153.00	6.67	23.927				0
2,000.00	1,987.17	1,978.50	1,948.75	3.59	3.74	29.11	168.63	161.59	7.04	23.949				0
2,100.00	2,085.88	2,078.10	2,045.43	3.78	3.95	29.16	177.59	170.18	7.41	23.968				0
2,200.00	2,184.59	2,177.70	2,142.11	3.97	4.16	29.21	186.55	178.77	7.78	23.985				0
2,300.00	2,283.29	2,277.30	2,238.78	4.16	4.37	29.25	195.51	187.36	8.15	23.999				0
2,400.00	2,382.00	2,376.89	2,335.46	4.35	4.58	29.29	204.46	195.95	8.52	24.011				0
2,500.00	2,480.71	2,476.49	2,432.14	4.54	4.79	29.33	213.42	204.54	8.88	24.022				0
2,600.00	2,579.42	2,576.09	2,528.82	4.74	5.00	29.36	222.38	213.13	9.25	24.032				0
2,700.00	2,678.13	2,675.69	2,625.50	4.93	5.21	29.39	231.34	221.71	9.62	24.040				0
2,800.00	2,776.83	2,775.29	2,722.18	5.12	5.42	29.42	240.30	230.30	9.99	24.048				0
2,900.00	2,875.54	2,874.88	2,818.86	5.31	5.64	29.45	249.25	238.89	10.36	24.055				0
3,000.00	2,974.25	2,974.48	2,915.54	5.50	5.85	29.47	258.21	247.48	10.73	24.061				0
3,100.00	3,072.96	3,074.08	3,012.22	5.70	6.06	29.50	267.17	256.07	11.10	24.066				0
3,200.00	3,171.66	3,173.68	3,108.90	5.89	6.27	29.52	276.13	264.66	11.47	24.071				0
3,300.00	3,270.37	3,273.27	3,205.58	6.08	6.49	29.54	285.09	273.24	11.84	24.076				0
3,400.00	3,369.08	3,372.87	3,302.26	6.27	6.70	29.56	294.04	281.83	12.21	24.080				0
3,500.00	3,467.79	3,472.47	3,398.94	6.47	6.91	29.58	303.00	290.42	12.58	24.083				0
3,600.00	3,566.50	3,572.07	3,495.62	6.66	7.13	29.59	311.96	299.01	12.95	24.087				0
3,700.00	3,665.20	3,671.67	3,592.30	6.85	7.34	29.61	320.92	307.60	13.32	24.090				0
3,800.00	3,763.91	3,771.26	3,688.98	7.05	7.55	29.63	329.88	316.19	13.69	24.093				0
3,900.00	3,862.62	3,870.86	3,785.66	7.24	7.77	29.64	338.84	324.77	14.06	24.095				0
4,000.00	3,961.33	3,970.46	3,882.33	7.43	7.98	29.65	347.79	333.36	14.43	24.098				0
4,100.00	4,060.03	4,070.06	3,979.01	7.62	8.19	29.67	356.75	341.95	14.80	24.100				0
4,200.00	4,158.74	4,169.66	4,075.69	7.82	8.41	29.68	365.71	350.54	15.17	24.102				0
4,300.00	4,257.45	4,269.25	4,172.37	8.01	8.62	29.69	374.67	359.13	15.54	24.104				0
4,400.00	4,356.16	4,368.85	4,269.05	8.20	8.83	29.70	383.63	367.71	15.91	24.106				0
4,500.00	4,454.87	4,468.45	4,365.73	8.40	9.05	29.71	392.59	376.30	16.28	24.108				0
4,600.00	4,553.57	4,568.05	4,462.41	8.59	9.26	29.72	401.55	384.89	16.66	24.109				0
4,700.00	4,652.28	4,667.65	4,559.09	8.78	9.47	29.73	410.50	393.48	17.03	24.111				0
4,800.00	4,750.99	4,767.24	4,655.77	8.98	9.69	29.74	419.46	402.07	17.40	24.112				0
4,900.00	4,849.70	4,866.84	4,752.45	9.17	9.90	29.75	428.42	410.65	17.77	24.113				0
5,000.00	4,948.40	4,966.44	4,849.13	9.36	10.12	29.76	437.38	419.24	18.14	24.114				0
5,100.00	5,047.11	5,066.04	4,945.81	9.56	10.33	29.77	446.34	427.83	18.51	24.115				0
5,200.00	5,145.82	5,165.63	5,042.49	9.75	10.54	29.78	455.30	436.42	18.88	24.117				0

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



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Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 1 - Original Hole - Rev 0	Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision			
5,300.00	5,244.53	5,265.23	5,139.17	9.94	10.76	29.78	464.26	445.01	19.25	24.118	0				
5,400.00	5,343.24	5,364.83	5,235.85	10.14	10.97	29.79	473.21	453.59	19.62	24.118	0				
5,500.00	5,441.94	5,464.43	5,332.53	10.33	11.19	29.80	482.17	462.18	19.99	24.119	0				
5,600.00	5,540.65	5,564.03	5,429.21	10.52	11.40	29.80	491.13	470.77	20.36	24.120	0				
5,700.00	5,639.36	5,663.62	5,525.89	10.72	11.61	29.81	500.09	479.36	20.73	24.121	0				
5,800.00	5,738.07	5,763.22	5,622.56	10.91	11.83	29.82	509.05	487.94	21.10	24.122	0				
5,900.00	5,836.77	5,862.82	5,719.24	11.10	12.04	29.82	518.01	496.53	21.47	24.122	0				
6,000.00	5,935.48	5,973.44	5,826.79	11.30	12.27	29.86	526.42	504.55	21.86	24.076	0				
6,100.00	6,034.19	6,094.39	5,945.33	11.49	12.51	30.05	531.30	509.03	22.27	23.854	0				
6,200.00	6,132.90	6,215.54	6,064.98	11.68	12.74	30.42	532.21	509.53	22.68	23.464	0				
6,300.00	6,231.61	6,336.46	6,185.09	11.88	12.95	30.98	529.18	506.09	23.09	22.918	0				
6,393.93	6,324.32	6,449.45	6,297.77	12.06	13.14	31.69	522.78	499.30	23.47	22.270	0				
6,400.00	6,330.31	6,456.73	6,305.04	12.07	13.15	31.74	522.25	498.75	23.50	22.225	0				
6,500.00	6,429.31	6,576.26	6,424.50	12.26	13.33	32.49	513.16	489.28	23.88	21.488	0				
6,600.00	6,528.74	6,680.50	6,528.74	12.44	13.49	33.07	504.33	480.11	24.22	20.824	0				
6,700.00	6,628.48	6,779.77	6,627.84	12.61	13.63	33.95	498.37	473.84	24.54	20.310	0				
6,800.00	6,728.41	6,875.16	6,721.39	12.77	13.75	36.25	496.00	471.11	24.89	19.928	0				
6,802.59	6,731.00	6,877.55	6,723.69	12.78	13.76	36.33	495.99	471.09	24.90	19.920	0				
6,854.98	6,783.38	6,924.78	6,768.69	12.86	13.81	4.72	496.74	470.61	26.14	19.006	0				
6,900.00	6,828.40	6,963.53	6,804.73	12.93	13.86	6.35	498.46	472.24	26.22	19.011	0				
6,954.98	6,883.38	7,008.22	6,845.14	13.02	13.91	8.52	501.83	475.51	26.31	19.071	0				
7,000.00	6,928.37	7,043.24	6,875.81	13.09	13.95	-79.36	505.60	479.78	25.82	19.582	0				
7,050.00	6,978.05	7,081.37	6,908.09	13.17	13.99	-77.08	510.52	484.43	26.09	19.566	0				
7,100.00	7,027.15	7,118.78	6,938.53	13.24	14.03	-74.89	516.07	489.73	26.34	19.590	0				
7,150.00	7,075.37	7,155.56	6,967.15	13.30	14.07	-72.79	522.10	495.54	26.57	19.654	0				
7,200.00	7,122.40	7,191.78	6,993.99	13.37	14.11	-70.80	528.48	501.73	26.75	19.757	0				
7,250.00	7,167.96	7,227.50	7,019.07	13.43	14.15	-68.93	535.06	508.18	26.89	19.901	0				
7,300.00	7,211.76	7,262.79	7,042.40	13.49	14.19	-67.17	541.73	514.76	26.97	20.085	0				
7,350.00	7,253.54	7,300.00	7,065.38	13.55	14.24	-65.48	548.37	521.36	27.02	20.298	0				
7,400.00	7,293.04	7,332.25	7,083.88	13.61	14.28	-64.05	554.86	527.86	27.00	20.552	0				
7,450.00	7,330.01	7,366.51	7,102.04	13.67	14.32	-62.69	561.10	534.15	26.95	20.823	0				
7,500.00	7,364.22	7,400.00	7,118.26	13.73	14.37	-61.47	567.01	540.15	26.86	21.111	0				
7,550.00	7,395.48	7,434.29	7,133.25	13.79	14.41	-60.36	572.50	545.74	26.75	21.398	0				
7,600.00	7,423.57	7,467.86	7,146.29	13.86	14.46	-59.40	577.50	550.86	26.64	21.681	0				
7,650.00	7,448.34	7,500.00	7,157.23	13.93	14.51	-58.59	581.96	555.43	26.53	21.939	0				
7,700.00	7,469.62	7,534.54	7,167.28	14.01	14.57	-57.87	585.81	559.36	26.44	22.153	0				
7,750.00	7,487.29	7,567.69	7,175.22	14.09	14.63	-57.30	589.01	562.63	26.38	22.325	0				
7,800.00	7,501.23	7,600.00	7,181.34	14.18	14.69	-56.86	591.54	565.18	26.36	22.439	0				
7,850.00	7,511.36	7,633.76	7,186.00	14.28	14.75	-56.55	593.36	566.95	26.40	22.472	0				
7,900.00	7,517.63	7,666.71	7,188.84	14.38	14.82	-56.36	594.44	567.94	26.50	22.431	0				
7,954.98	7,520.00	7,702.92	7,190.00	14.51	14.90	-56.30	594.79	568.10	26.68	22.290	0				
7,971.20	7,520.00	7,717.99	7,190.00	14.55	14.93	-56.30	594.78	568.01	26.77	22.214	0				
8,000.00	7,520.00	7,746.79	7,190.00	14.63	15.00	-56.30	594.78	567.84	26.94	22.076	0				
8,100.00	7,520.00	7,846.79	7,190.00	14.90	15.25	-56.30	594.78	567.23	27.55	21.590	0				
8,200.00	7,520.00	7,946.79	7,190.00	15.22	15.54	-56.30	594.78	566.59	28.20	21.095	0				
8,300.00	7,520.00	8,046.79	7,190.00	15.56	15.85	-56.30	594.78	565.90	28.88	20.596	0				
8,400.00	7,520.00	8,146.79	7,190.00	15.92	16.19	-56.30	594.78	565.19	29.60	20.096	0				
8,500.00	7,520.00	8,246.79	7,190.00	16.31	16.56	-56.30	594.78	564.44	30.35	19.599	0				
8,600.00	7,520.00	8,346.79	7,190.00	16.72	16.95	-56.30	594.78	563.66	31.13	19.108	0				
8,700.00	7,520.00	8,446.79	7,190.00	17.15	17.36	-56.30	594.78	562.85	31.94	18.624	0				
8,800.00	7,520.00	8,546.79	7,190.00	17.59	17.79	-56.30	594.78	562.02	32.77	18.150	0				
8,900.00	7,520.00	8,646.79	7,190.00	18.05	18.24	-56.30	594.79	561.16	33.63	17.688	0				
9,000.00	7,520.00	8,746.79	7,190.00	18.53	18.71	-56.30	594.79	560.28	34.51	17.237	0				
9,100.00	7,520.00	8,846.79	7,190.00	19.02	19.19	-56.30	594.79	559.38	35.41	16.799	0				

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



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder												Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
9,200.00	7,520.00	8,946.79	7,190.00	19.53	19.68	-56.30	594.79	558.46	36.32	16.374	0		
9,300.00	7,520.00	9,046.79	7,190.00	20.04	20.19	-56.30	594.79	557.53	37.26	15.963	0		
9,400.00	7,520.00	9,146.79	7,190.00	20.57	20.71	-56.30	594.79	556.58	38.21	15.565	0		
9,500.00	7,520.00	9,246.79	7,190.00	21.11	21.24	-56.30	594.79	555.61	39.18	15.181	0		
9,600.00	7,520.00	9,346.79	7,190.00	21.65	21.78	-56.30	594.79	554.63	40.16	14.810	0		
9,700.00	7,520.00	9,446.79	7,190.00	22.21	22.33	-56.30	594.79	553.64	41.15	14.453	0		
9,800.00	7,520.00	9,546.79	7,190.00	22.77	22.88	-56.30	594.79	552.63	42.16	14.108	0		
9,900.00	7,520.00	9,646.79	7,190.00	23.34	23.45	-56.30	594.79	551.61	43.18	13.776	0		
10,000.00	7,520.00	9,746.79	7,190.00	23.92	24.02	-56.30	594.79	550.59	44.20	13.456	0		
10,100.00	7,520.00	9,846.79	7,190.00	24.51	24.60	-56.30	594.79	549.55	45.24	13.147	0		
10,200.00	7,520.00	9,946.79	7,190.00	25.10	25.18	-56.30	594.79	548.51	46.29	12.850	0		
10,300.00	7,520.00	10,046.79	7,190.00	25.69	25.78	-56.30	594.80	547.45	47.34	12.564	0		
10,400.00	7,520.00	10,146.79	7,190.00	26.29	26.37	-56.30	594.80	546.39	48.40	12.288	0		
10,500.00	7,520.00	10,246.79	7,190.00	26.90	26.97	-56.30	594.80	545.32	49.47	12.023	0		
10,600.00	7,520.00	10,346.79	7,190.00	27.51	27.58	-56.30	594.80	544.25	50.55	11.767	0		
10,700.00	7,520.00	10,446.79	7,190.00	28.13	28.19	-56.30	594.80	543.17	51.63	11.520	0		
10,800.00	7,520.00	10,546.79	7,190.00	28.75	28.81	-56.30	594.80	542.08	52.72	11.282	0		
10,900.00	7,520.00	10,646.79	7,190.00	29.37	29.43	-56.30	594.80	540.99	53.82	11.052	0		
11,000.00	7,520.00	10,746.79	7,190.00	30.00	30.05	-56.30	594.80	539.89	54.92	10.831	0		
11,100.00	7,520.00	10,846.79	7,190.00	30.63	30.68	-56.30	594.80	538.78	56.02	10.617	0		
11,200.00	7,520.00	10,946.79	7,190.00	31.26	31.31	-56.30	594.81	537.67	57.13	10.411	0		
11,300.00	7,520.00	11,046.79	7,190.00	31.90	31.94	-56.30	594.81	536.56	58.25	10.212	0		
11,400.00	7,520.00	11,146.79	7,190.00	32.54	32.57	-56.30	594.81	535.44	59.36	10.020	0		
11,500.00	7,520.00	11,246.79	7,190.00	33.18	33.21	-56.30	594.81	534.32	60.49	9.834	0		
11,600.00	7,520.00	11,346.79	7,190.00	33.82	33.85	-56.30	594.81	533.20	61.61	9.654	0		
11,700.00	7,520.00	11,446.79	7,190.00	34.47	34.50	-56.30	594.81	532.07	62.74	9.480	0		
11,800.00	7,520.00	11,546.79	7,190.00	35.12	35.14	-56.30	594.81	530.94	63.88	9.312	0		
11,900.00	7,520.00	11,646.79	7,190.00	35.77	35.79	-56.30	594.82	529.80	65.01	9.149	0		
12,000.00	7,520.00	11,746.79	7,190.00	36.42	36.44	-56.30	594.82	528.67	66.15	8.992	0		
12,100.00	7,520.00	11,846.79	7,190.00	37.07	37.09	-56.30	594.82	527.52	67.30	8.839	0		
12,200.00	7,520.00	11,946.79	7,190.00	37.73	37.75	-56.30	594.82	526.38	68.44	8.691	0		
12,300.00	7,520.00	12,046.79	7,190.00	38.39	38.40	-56.30	594.82	525.24	69.59	8.548	0		
12,400.00	7,520.00	12,146.79	7,190.00	39.05	39.06	-56.30	594.83	524.09	70.74	8.409	0		
12,500.00	7,520.00	12,246.79	7,190.00	39.71	39.72	-56.30	594.83	522.94	71.89	8.274	0		
12,600.00	7,520.00	12,346.79	7,190.00	40.37	40.38	-56.30	594.83	521.78	73.05	8.143	0		
12,700.00	7,520.00	12,446.79	7,190.00	41.04	41.04	-56.30	594.83	520.63	74.20	8.016	0		
12,800.00	7,520.00	12,546.79	7,190.00	41.70	41.70	-56.30	594.83	519.47	75.36	7.893	0		
12,900.00	7,520.00	12,646.79	7,190.00	42.37	42.37	-56.30	594.84	518.31	76.52	7.773	0		
13,000.00	7,520.00	12,746.79	7,190.00	43.03	43.03	-56.30	594.84	517.15	77.69	7.657	0		
13,100.00	7,520.00	12,846.79	7,190.00	43.70	43.70	-56.31	594.84	515.99	78.85	7.544	0		
13,200.00	7,520.00	12,946.79	7,190.00	44.37	44.37	-56.31	594.84	514.82	80.02	7.434	0		
13,300.00	7,520.00	13,046.79	7,190.00	45.04	45.04	-56.31	594.84	513.66	81.19	7.327	0		
13,400.00	7,520.00	13,146.79	7,190.00	45.72	45.71	-56.31	594.85	512.49	82.35	7.223	0		
13,500.00	7,520.00	13,246.79	7,190.00	46.39	46.38	-56.31	594.85	511.32	83.53	7.122	0		
13,600.00	7,520.00	13,346.79	7,190.00	47.06	47.05	-56.31	594.85	510.15	84.70	7.023	0		
13,700.00	7,520.00	13,446.79	7,190.00	47.74	47.72	-56.31	594.85	508.98	85.87	6.927	0		
13,800.00	7,520.00	13,546.79	7,190.00	48.41	48.40	-56.31	594.86	507.81	87.05	6.834	0		
13,900.00	7,520.00	13,646.79	7,190.00	49.09	49.07	-56.31	594.86	506.63	88.22	6.743	0		
14,000.00	7,520.00	13,746.79	7,190.00	49.76	49.75	-56.31	594.86	505.46	89.40	6.654	0		
14,100.00	7,520.00	13,846.79	7,190.00	50.44	50.42	-56.31	594.86	504.28	90.58	6.567	0		
14,200.00	7,520.00	13,946.79	7,190.00	51.12	51.10	-56.31	594.87	503.11	91.76	6.483	0		
14,300.00	7,520.00	14,046.79	7,190.00	51.80	51.78	-56.31	594.87	501.93	92.94	6.400	0		
14,400.00	7,520.00	14,146.79	7,190.00	52.48	52.45	-56.31	594.87	500.75	94.12	6.320	0		
14,500.00	7,520.00	14,246.79	7,190.00	53.16	53.13	-56.31	594.87	499.57	95.31	6.242	0		

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



Schlumberger
Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
14,600.00	7,520.00	14,346.78	7,190.00	53.84	53.81	-56.31	594.88	498.39	96.49	6.165	0			
14,700.00	7,520.00	14,446.78	7,190.00	54.52	54.49	-56.31	594.88	497.20	97.68	6.090	0			
14,800.00	7,520.00	14,546.78	7,190.00	55.20	55.17	-56.31	594.88	496.02	98.86	6.017	0			
14,900.00	7,520.00	14,646.78	7,190.00	55.89	55.86	-56.31	594.89	494.84	100.05	5.946	0			
15,000.00	7,520.00	14,746.77	7,190.00	56.57	56.54	-56.31	594.89	493.65	101.24	5.876	0			
15,100.00	7,520.00	14,846.77	7,190.00	57.25	57.22	-56.31	594.89	492.47	102.42	5.808	0			
15,200.00	7,520.00	14,946.77	7,190.00	57.94	57.90	-56.31	594.89	491.28	103.61	5.741	0			
15,300.00	7,520.00	15,046.77	7,190.00	58.62	58.59	-56.31	594.90	490.09	104.80	5.676	0			
15,400.00	7,520.00	15,146.77	7,190.00	59.30	59.27	-56.31	594.90	488.91	105.99	5.613	0			
15,500.00	7,520.00	15,246.77	7,190.00	59.99	59.95	-56.31	594.90	487.72	107.19	5.550	0			
15,600.00	7,520.00	15,346.77	7,190.00	60.68	60.64	-56.31	594.91	486.53	108.38	5.489	0			
15,700.00	7,520.00	15,446.77	7,190.00	61.36	61.32	-56.31	594.91	485.34	109.57	5.429	0			
15,800.00	7,520.00	15,546.77	7,190.00	62.05	62.01	-56.31	594.91	484.15	110.76	5.371	0			
15,900.00	7,520.00	15,646.77	7,190.00	62.74	62.70	-56.31	594.92	482.96	111.96	5.314	0			
16,000.00	7,520.00	15,746.77	7,190.00	63.42	63.38	-56.31	594.92	481.77	113.15	5.258	0			
16,100.00	7,520.00	15,846.77	7,190.00	64.11	64.07	-56.31	594.92	480.58	114.35	5.203	0			
16,200.00	7,520.00	15,946.77	7,190.00	64.80	64.76	-56.31	594.93	479.38	115.54	5.149	0			
16,300.00	7,520.00	16,046.77	7,190.00	65.49	65.44	-56.31	594.93	478.19	116.74	5.096	0			
16,400.00	7,520.00	16,146.77	7,190.00	66.18	66.13	-56.31	594.93	477.00	117.94	5.044	0			
16,500.00	7,520.00	16,246.77	7,190.00	66.86	66.82	-56.31	594.94	475.80	119.13	4.994	0			
16,600.00	7,520.00	16,346.77	7,190.00	67.55	67.51	-56.31	594.94	474.61	120.33	4.944	0			
16,700.00	7,520.00	16,446.77	7,190.00	68.24	68.20	-56.31	594.95	473.41	121.53	4.895	0			
16,800.00	7,520.00	16,546.77	7,190.00	68.93	68.89	-56.31	594.95	472.22	122.73	4.848	0			
16,900.00	7,520.00	16,646.77	7,190.00	69.62	69.57	-56.31	594.95	471.02	123.93	4.801	0			
17,000.00	7,520.00	16,746.77	7,190.00	70.31	70.26	-56.31	594.96	469.83	125.13	4.755	0			
17,100.00	7,520.00	16,846.77	7,190.00	71.00	70.95	-56.31	594.96	468.63	126.33	4.710	0			
17,200.00	7,520.00	16,946.77	7,190.00	71.69	71.64	-56.31	594.96	467.43	127.53	4.665	0			
17,300.00	7,520.00	17,046.77	7,190.00	72.39	72.33	-56.31	594.97	466.24	128.73	4.622	0			
17,400.00	7,520.00	17,146.77	7,190.00	73.08	73.03	-56.31	594.97	465.04	129.93	4.579	0			
17,500.00	7,520.00	17,246.77	7,190.00	73.77	73.72	-56.31	594.98	463.84	131.13	4.537	0			
17,547.01	7,520.00	17,293.77	7,190.00	74.09	74.04	-56.31	594.98	463.28	131.70	4.518	0			
17,582.23	7,520.00	17,324.42	7,190.00	74.34	74.25	-56.31	595.00	462.91	132.10	4.504	0	SF		

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



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
0.00	0.00	4.00	4.00	0.00	0.01	179.96	196.01				0		
100.00	100.00	104.00	104.00	0.15	0.15	179.96	196.01	195.71	0.30	652.923	0		
200.00	200.00	204.00	204.00	0.32	0.33	179.96	196.01	195.36	0.65	301.890	0		
300.00	300.00	304.00	304.00	0.50	0.50	179.96	196.01	195.01	1.00	196.334	0		
400.00	400.00	404.00	404.00	0.67	0.68	179.96	196.01	194.66	1.35	145.470	0		
500.00	500.00	504.00	504.00	0.84	0.85	179.96	196.01	194.31	1.70	115.538	0		
600.00	600.00	604.00	604.00	1.02	1.03	179.96	196.01	193.96	2.05	95.822	0		
700.00	700.00	704.00	704.00	1.19	1.20	179.96	196.01	193.61	2.39	81.853	0		
800.00	799.98	803.79	803.79	1.37	1.37	-147.01	197.47	194.73	2.74	71.997	0		CC, ES
900.00	899.84	900.00	899.98	1.54	1.54	-147.38	203.15	200.06	3.08	65.882	0		
1,000.00	999.45	993.43	993.28	1.72	1.71	-147.54	214.09	210.67	3.42	62.631	0		
1,100.00	1,098.70	1,087.01	1,086.53	1.90	1.87	-147.51	230.24	226.49	3.75	61.358	0		
1,161.05	1,159.06	1,143.52	1,142.70	2.01	1.97	-147.40	242.63	238.68	3.95	61.348	0		
1,200.00	1,197.51	1,179.33	1,178.22	2.08	2.04	-147.37	251.31	247.22	4.09	61.484	0		
1,300.00	1,296.22	1,275.48	1,273.46	2.27	2.21	-147.13	274.41	269.97	4.44	61.862	0		
1,400.00	1,394.92	1,372.76	1,369.80	2.45	2.39	-146.91	297.55	292.77	4.79	62.154	0		
1,500.00	1,493.63	1,470.04	1,466.15	2.64	2.57	-146.73	320.70	315.56	5.14	62.393	0		
1,600.00	1,592.34	1,567.32	1,562.49	2.83	2.74	-146.57	343.85	338.36	5.49	62.589	0		
1,700.00	1,691.05	1,664.60	1,658.83	3.02	2.92	-146.43	367.01	361.16	5.85	62.754	0		
1,800.00	1,789.76	1,761.88	1,755.18	3.21	3.10	-146.31	390.17	383.96	6.20	62.895	0		
1,900.00	1,888.46	1,859.16	1,851.52	3.40	3.28	-146.20	413.32	406.76	6.56	63.016	0		
2,000.00	1,987.17	1,956.43	1,947.86	3.59	3.46	-146.10	436.48	429.57	6.91	63.122	0		
2,100.00	2,085.88	2,053.71	2,044.21	3.78	3.65	-146.01	459.64	452.37	7.27	63.214	0		
2,200.00	2,184.59	2,150.99	2,140.55	3.97	3.83	-145.93	482.80	475.18	7.63	63.296	0		
2,300.00	2,283.29	2,248.27	2,236.89	4.16	4.01	-145.86	505.96	497.98	7.98	63.368	0		
2,400.00	2,382.00	2,345.55	2,333.24	4.35	4.19	-145.79	529.13	520.79	8.34	63.433	0		
2,500.00	2,480.71	2,442.83	2,429.58	4.54	4.37	-145.73	552.29	543.59	8.70	63.491	0		
2,600.00	2,579.42	2,540.11	2,525.93	4.74	4.55	-145.68	575.45	566.40	9.06	63.543	0		
2,700.00	2,678.13	2,637.39	2,622.27	4.93	4.74	-145.62	598.62	589.20	9.41	63.591	0		
2,800.00	2,776.83	2,734.66	2,718.61	5.12	4.92	-145.58	621.78	612.01	9.77	63.634	0		
2,900.00	2,875.54	2,831.94	2,814.96	5.31	5.10	-145.53	644.95	634.82	10.13	63.673	0		
3,000.00	2,974.25	2,929.22	2,911.30	5.50	5.28	-145.49	668.11	657.63	10.49	63.709	0		
3,100.00	3,072.96	3,026.50	3,007.64	5.70	5.47	-145.45	691.28	680.43	10.84	63.742	0		
3,200.00	3,171.66	3,123.78	3,103.99	5.89	5.65	-145.42	714.44	703.24	11.20	63.773	0		
3,300.00	3,270.37	3,221.06	3,200.33	6.08	5.83	-145.38	737.61	726.05	11.56	63.801	0		
3,400.00	3,369.08	3,318.34	3,296.68	6.27	6.02	-145.35	760.78	748.86	11.92	63.827	0		
3,500.00	3,467.79	3,415.62	3,393.02	6.47	6.20	-145.32	783.94	771.67	12.28	63.851	0		
3,600.00	3,566.50	3,512.89	3,489.36	6.66	6.38	-145.30	807.11	794.47	12.64	63.874	0		
3,700.00	3,665.20	3,610.17	3,585.71	6.85	6.56	-145.27	830.28	817.28	12.99	63.895	0		
3,800.00	3,763.91	3,707.45	3,682.05	7.05	6.75	-145.24	853.44	840.09	13.35	63.915	0		
3,900.00	3,862.62	3,804.73	3,778.39	7.24	6.93	-145.22	876.61	862.90	13.71	63.933	0		
4,000.00	3,961.33	3,902.01	3,874.74	7.43	7.11	-145.20	899.78	885.71	14.07	63.951	0		
4,100.00	4,060.03	3,999.29	3,971.08	7.62	7.30	-145.18	922.95	908.52	14.43	63.967	0		
4,200.00	4,158.74	4,096.57	4,067.42	7.82	7.48	-145.16	946.11	931.33	14.79	63.983	0		
4,300.00	4,257.45	4,193.85	4,163.77	8.01	7.66	-145.14	969.28	954.13	15.15	63.997	0		
4,400.00	4,356.16	4,291.12	4,260.11	8.20	7.85	-145.12	992.45	976.94	15.50	64.011	0		
4,500.00	4,454.87	4,388.40	4,356.46	8.40	8.03	-145.10	1,015.62	999.75	15.86	64.024	0		
4,600.00	4,553.57	4,485.68	4,452.80	8.59	8.21	-145.08	1,038.78	1,022.56	16.22	64.036	0		
4,700.00	4,652.28	4,582.96	4,549.14	8.78	8.40	-145.07	1,061.95	1,045.37	16.58	64.048	0		
4,800.00	4,750.99	4,680.24	4,645.49	8.98	8.58	-145.05	1,085.12	1,068.18	16.94	64.059	0		
4,900.00	4,849.70	4,777.52	4,741.83	9.17	8.76	-145.04	1,108.29	1,090.99	17.30	64.070	0		
5,000.00	4,948.40	4,874.80	4,838.17	9.36	8.95	-145.02	1,131.46	1,113.80	17.66	64.080	0		
5,100.00	5,047.11	4,972.08	4,934.52	9.56	9.13	-145.01	1,154.62	1,136.61	18.02	64.089	0		
5,200.00	5,145.82	5,069.36	5,030.86	9.75	9.31	-145.00	1,177.79	1,159.42	18.37	64.098	0		

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



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 10 - Original Hole - Rev 0	Offset Site Error:	0.00 usft
Survey Program:													0-Pathfinder	Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance								Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision			
5,300.00	5,244.53	5,166.63	5,127.20	9.94	9.50	-144.99	1,200.96	1,182.23	18.73	64.107	0				
5,400.00	5,343.24	5,263.91	5,223.55	10.14	9.68	-144.97	1,224.13	1,205.04	19.09	64.116	0				
5,500.00	5,441.94	5,361.19	5,319.89	10.33	9.86	-144.96	1,247.30	1,227.85	19.45	64.124	0				
5,600.00	5,540.65	5,458.47	5,416.24	10.52	10.05	-144.95	1,270.47	1,250.66	19.81	64.131	0				
5,700.00	5,639.36	5,555.75	5,512.58	10.72	10.23	-144.94	1,293.64	1,273.47	20.17	64.139	0				
5,800.00	5,738.07	5,653.03	5,608.92	10.91	10.42	-144.93	1,316.80	1,296.28	20.53	64.146	0				
5,900.00	5,836.77	5,750.31	5,705.27	11.10	10.60	-144.92	1,339.97	1,319.09	20.89	64.152	0				
6,000.00	5,935.48	5,847.59	5,801.61	11.30	10.78	-144.91	1,363.14	1,341.90	21.25	64.159	0				
6,100.00	6,034.19	5,944.86	5,897.95	11.49	10.97	-144.90	1,386.31	1,364.70	21.61	64.165	0				
6,200.00	6,132.90	6,042.14	5,994.30	11.68	11.15	-144.89	1,409.48	1,387.51	21.96	64.171	0				
6,300.00	6,231.61	6,158.95	6,110.04	11.88	11.37	-144.89	1,432.42	1,410.06	22.36	64.071	0				
6,393.93	6,324.32	6,304.47	6,254.90	12.06	11.63	-145.06	1,451.23	1,428.45	22.78	63.699	0				
6,400.00	6,330.31	6,313.94	6,264.35	12.07	11.64	-145.09	1,452.32	1,429.51	22.81	63.662	0				
6,500.00	6,429.31	6,471.13	6,421.40	12.26	11.91	-145.59	1,466.75	1,443.45	23.30	62.939	0				
6,600.00	6,528.74	6,582.47	6,532.74	12.44	12.09	-145.95	1,475.63	1,451.93	23.70	62.260	0				
6,700.00	6,628.48	6,683.43	6,633.48	12.61	12.25	-146.37	1,481.53	1,457.48	24.05	61.591	0				
6,800.00	6,728.41	6,780.53	6,728.51	12.77	12.38	-147.23	1,484.64	1,460.28	24.37	60.931	0				
6,854.98	6,783.38	6,830.86	6,776.30	12.86	12.45	178.86	1,485.35	1,460.46	24.89	59.671	0				
6,900.00	6,828.40	6,870.06	6,812.57	12.93	12.50	178.28	1,485.81	1,460.78	25.03	59.354	0				
6,954.98	6,883.38	6,915.15	6,853.08	13.02	12.55	177.52	1,486.80	1,461.60	25.20	58.998	0				
7,000.00	6,928.37	6,950.00	6,883.36	13.09	12.59	86.79	1,487.97	1,463.07	24.90	59.763	0				
7,050.00	6,978.05	6,988.76	6,915.88	13.17	12.64	85.98	1,489.56	1,464.54	25.01	59.549	0				
7,100.00	7,027.15	7,026.35	6,946.12	13.24	12.68	85.19	1,491.40	1,466.27	25.12	59.362	0				
7,150.00	7,075.37	7,063.27	6,974.50	13.30	12.73	84.42	1,493.45	1,468.23	25.23	59.199	0				
7,200.00	7,122.40	7,100.00	7,001.33	13.37	12.77	83.67	1,495.68	1,470.35	25.33	59.057	0				
7,250.00	7,167.96	7,135.40	7,025.78	13.43	12.81	82.96	1,498.02	1,472.60	25.42	58.932	0				
7,300.00	7,211.76	7,170.74	7,048.73	13.49	12.86	82.27	1,500.45	1,474.94	25.51	58.820	0				
7,350.00	7,253.54	7,200.00	7,066.58	13.55	12.90	81.68	1,502.93	1,477.34	25.59	58.732	0				
7,400.00	7,293.04	7,240.25	7,089.36	13.61	12.95	80.99	1,505.36	1,479.68	25.68	58.617	0				
7,450.00	7,330.01	7,274.50	7,107.06	13.67	13.00	80.41	1,507.77	1,482.00	25.77	58.515	0				
7,500.00	7,364.22	7,308.48	7,123.03	13.73	13.05	79.87	1,510.08	1,484.23	25.85	58.406	0				
7,550.00	7,395.48	7,342.22	7,137.29	13.79	13.10	79.38	1,512.28	1,486.33	25.95	58.282	0				
7,600.00	7,423.57	7,375.75	7,149.83	13.86	13.15	78.93	1,514.32	1,488.27	26.05	58.139	0				
7,650.00	7,448.34	7,409.09	7,160.66	13.93	13.21	78.54	1,516.17	1,490.01	26.16	57.964	0				
7,700.00	7,469.62	7,450.00	7,171.68	14.01	13.28	78.15	1,517.83	1,491.54	26.29	57.732	0				
7,750.00	7,487.29	7,475.35	7,177.22	14.09	13.33	77.91	1,519.21	1,492.79	26.41	57.515	0				
7,800.00	7,501.23	7,500.00	7,181.67	14.18	13.39	77.70	1,520.39	1,493.84	26.55	57.271	0				
7,850.00	7,511.36	7,541.21	7,186.99	14.28	13.48	77.50	1,521.22	1,494.49	26.74	56.899	0				
7,900.00	7,517.63	7,574.04	7,189.34	14.38	13.56	77.38	1,521.81	1,494.89	26.92	56.522	0				
7,954.98	7,520.00	7,613.77	7,190.00	14.51	13.66	77.32	1,522.11	1,494.95	27.16	56.036	0				
8,000.00	7,520.00	7,658.80	7,190.00	14.63	13.79	77.32	1,522.11	1,494.70	27.41	55.523	0				
8,100.00	7,520.00	7,758.80	7,190.00	14.90	14.09	77.32	1,522.11	1,494.10	28.01	54.344	0				
8,200.00	7,520.00	7,858.80	7,190.00	15.22	14.42	77.32	1,522.11	1,493.46	28.66	53.113	0				
8,300.00	7,520.00	7,958.80	7,190.00	15.56	14.78	77.32	1,522.11	1,492.76	29.36	51.848	0				
8,400.00	7,520.00	8,058.80	7,190.00	15.92	15.16	77.32	1,522.11	1,492.01	30.10	50.563	0				
8,500.00	7,520.00	8,158.80	7,190.00	16.31	15.56	77.32	1,522.11	1,491.22	30.89	49.270	0				
8,600.00	7,520.00	8,258.80	7,190.00	16.72	15.98	77.32	1,522.11	1,490.39	31.72	47.981	0				
8,700.00	7,520.00	8,358.80	7,190.00	17.15	16.42	77.32	1,522.11	1,489.52	32.59	46.703	0				
8,800.00	7,520.00	8,458.80	7,190.00	17.59	16.88	77.32	1,522.11	1,488.62	33.49	45.446	0				
8,900.00	7,520.00	8,558.80	7,190.00	18.05	17.36	77.32	1,522.11	1,487.69	34.43	44.213	0				
9,000.00	7,520.00	8,658.80	7,190.00	18.53	17.85	77.32	1,522.11	1,486.72	35.39	43.010	0				
9,100.00	7,520.00	8,758.80	7,190.00	19.02	18.35	77.32	1,522.11	1,485.73	36.38	41.840	0				
9,200.00	7,520.00	8,858.80	7,190.00	19.53	18.87	77.32	1,522.11	1,484.72	37.39	40.705	0				
9,300.00	7,520.00	8,958.80	7,190.00	20.04	19.39	77.32	1,522.11	1,483.68	38.43	39.607	0				

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



Schlumberger

Anticollision Risk Report



Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder												Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
9,400.00	7,520.00	9,058.80	7,190.00	20.57	19.93	77.32	1,522.11	1,482.62	39.49	38.545	0		
9,500.00	7,520.00	9,158.80	7,190.00	21.11	20.48	77.32	1,522.11	1,481.55	40.57	37.522	0		
9,600.00	7,520.00	9,258.80	7,190.00	21.65	21.04	77.32	1,522.11	1,480.45	41.66	36.535	0		
9,700.00	7,520.00	9,358.80	7,190.00	22.21	21.61	77.32	1,522.11	1,479.34	42.77	35.586	0		
9,800.00	7,520.00	9,458.80	7,190.00	22.77	22.18	77.32	1,522.11	1,478.21	43.90	34.672	0		
9,900.00	7,520.00	9,558.80	7,190.00	23.34	22.76	77.32	1,522.11	1,477.07	45.04	33.794	0		
10,000.00	7,520.00	9,658.80	7,190.00	23.92	23.35	77.32	1,522.11	1,475.92	46.20	32.949	0		
10,100.00	7,520.00	9,758.80	7,190.00	24.51	23.94	77.32	1,522.11	1,474.75	47.36	32.138	0		
10,200.00	7,520.00	9,858.80	7,190.00	25.10	24.55	77.32	1,522.11	1,473.57	48.54	31.359	0		
10,300.00	7,520.00	9,958.80	7,190.00	25.69	25.15	77.32	1,522.11	1,472.39	49.73	30.610	0		
10,400.00	7,520.00	10,058.80	7,190.00	26.29	25.76	77.32	1,522.11	1,471.19	50.92	29.890	0		
10,500.00	7,520.00	10,158.80	7,190.00	26.90	26.38	77.32	1,522.11	1,469.98	52.13	29.198	0		
10,600.00	7,520.00	10,258.80	7,190.00	27.51	27.00	77.32	1,522.11	1,468.77	53.35	28.533	0		
10,700.00	7,520.00	10,358.80	7,190.00	28.13	27.62	77.32	1,522.11	1,467.54	54.57	27.894	0		
10,800.00	7,520.00	10,458.80	7,190.00	28.75	28.25	77.32	1,522.11	1,466.31	55.80	27.279	0		
10,900.00	7,520.00	10,558.80	7,190.00	29.37	28.88	77.32	1,522.11	1,465.08	57.04	26.687	0		
11,000.00	7,520.00	10,658.80	7,190.00	30.00	29.51	77.32	1,522.11	1,463.83	58.28	26.118	0		
11,100.00	7,520.00	10,758.80	7,190.00	30.63	30.15	77.32	1,522.11	1,462.58	59.53	25.570	0		
11,200.00	7,520.00	10,858.80	7,190.00	31.26	30.79	77.32	1,522.11	1,461.33	60.78	25.042	0		
11,300.00	7,520.00	10,958.80	7,190.00	31.90	31.43	77.32	1,522.11	1,460.07	62.04	24.533	0		
11,400.00	7,520.00	11,058.80	7,190.00	32.54	32.08	77.32	1,522.11	1,458.80	63.31	24.043	0		
11,500.00	7,520.00	11,158.80	7,190.00	33.18	32.72	77.32	1,522.11	1,457.53	64.58	23.570	0		
11,600.00	7,520.00	11,258.80	7,190.00	33.82	33.37	77.32	1,522.11	1,456.26	65.85	23.114	0		
11,700.00	7,520.00	11,358.80	7,190.00	34.47	34.03	77.32	1,522.11	1,454.98	67.13	22.674	0		
11,800.00	7,520.00	11,458.80	7,190.00	35.12	34.68	77.32	1,522.11	1,453.70	68.41	22.249	0		
11,900.00	7,520.00	11,558.80	7,190.00	35.77	35.34	77.32	1,522.11	1,452.41	69.70	21.838	0		
12,000.00	7,520.00	11,658.80	7,190.00	36.42	35.99	77.32	1,522.11	1,451.12	70.99	21.441	0		
12,100.00	7,520.00	11,758.80	7,190.00	37.07	36.65	77.32	1,522.11	1,449.83	72.28	21.058	0		
12,200.00	7,520.00	11,858.80	7,190.00	37.73	37.31	77.32	1,522.11	1,448.53	73.58	20.687	0		
12,300.00	7,520.00	11,958.80	7,190.00	38.39	37.98	77.32	1,522.11	1,447.23	74.88	20.328	0		
12,400.00	7,520.00	12,058.80	7,190.00	39.05	38.64	77.32	1,522.11	1,445.93	76.18	19.980	0		
12,500.00	7,520.00	12,158.80	7,190.00	39.71	39.31	77.32	1,522.11	1,444.63	77.48	19.644	0		
12,600.00	7,520.00	12,258.80	7,190.00	40.37	39.97	77.32	1,522.11	1,443.32	78.79	19.318	0		
12,700.00	7,520.00	12,358.80	7,190.00	41.04	40.64	77.32	1,522.11	1,442.01	80.10	19.002	0		
12,800.00	7,520.00	12,458.80	7,190.00	41.70	41.31	77.32	1,522.11	1,440.70	81.41	18.696	0		
12,900.00	7,520.00	12,558.80	7,190.00	42.37	41.98	77.32	1,522.11	1,439.39	82.73	18.399	0		
13,000.00	7,520.00	12,658.80	7,190.00	43.03	42.65	77.32	1,522.11	1,438.07	84.04	18.111	0		
13,100.00	7,520.00	12,758.80	7,190.00	43.70	43.32	77.32	1,522.11	1,436.75	85.36	17.831	0		
13,200.00	7,520.00	12,858.80	7,190.00	44.37	44.00	77.32	1,522.11	1,435.43	86.68	17.560	0		
13,300.00	7,520.00	12,958.80	7,190.00	45.04	44.67	77.32	1,522.11	1,434.11	88.00	17.296	0		
13,400.00	7,520.00	13,058.80	7,190.00	45.72	45.35	77.32	1,522.11	1,432.78	89.33	17.040	0		
13,500.00	7,520.00	13,158.80	7,190.00	46.39	46.02	77.32	1,522.11	1,431.46	90.65	16.790	0		
13,600.00	7,520.00	13,258.80	7,190.00	47.06	46.70	77.32	1,522.11	1,430.13	91.98	16.548	0		
13,700.00	7,520.00	13,358.80	7,190.00	47.74	47.38	77.32	1,522.11	1,428.80	93.31	16.313	0		
13,800.00	7,520.00	13,458.80	7,190.00	48.41	48.06	77.32	1,522.11	1,427.47	94.64	16.083	0		
13,900.00	7,520.00	13,558.80	7,190.00	49.09	48.73	77.32	1,522.11	1,426.14	95.97	15.860	0		
14,000.00	7,520.00	13,658.80	7,190.00	49.76	49.41	77.32	1,522.11	1,424.81	97.30	15.643	0		
14,100.00	7,520.00	13,758.80	7,190.00	50.44	50.09	77.32	1,522.11	1,423.47	98.64	15.431	0		
14,200.00	7,520.00	13,858.80	7,190.00	51.12	50.78	77.32	1,522.11	1,422.14	99.97	15.225	0		
14,300.00	7,520.00	13,958.80	7,190.00	51.80	51.46	77.32	1,522.11	1,420.80	101.31	15.024	0		
14,400.00	7,520.00	14,058.80	7,190.00	52.48	52.14	77.32	1,522.11	1,419.47	102.65	14.829	0		
14,500.00	7,520.00	14,158.80	7,190.00	53.16	52.82	77.32	1,522.11	1,418.13	103.99	14.638	0		
14,600.00	7,520.00	14,258.80	7,190.00	53.84	53.51	77.32	1,522.11	1,416.79	105.33	14.451	0		
14,700.00	7,520.00	14,358.80	7,190.00	54.52	54.19	77.32	1,522.11	1,415.45	106.67	14.270	0		

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



Schlumberger
Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
14,800.00	7,520.00	14,458.80	7,190.00	55.20	54.87	77.32	1,522.11	1,414.10	108.01	14.092	0			
14,900.00	7,520.00	14,558.80	7,190.00	55.89	55.56	77.32	1,522.11	1,412.76	109.35	13.919	0			
15,000.00	7,520.00	14,658.80	7,190.00	56.57	56.24	77.32	1,522.11	1,411.42	110.70	13.750	0			
15,100.00	7,520.00	14,758.80	7,190.00	57.25	56.93	77.32	1,522.11	1,410.07	112.04	13.585	0			
15,200.00	7,520.00	14,858.80	7,190.00	57.94	57.62	77.32	1,522.11	1,408.73	113.39	13.424	0			
15,300.00	7,520.00	14,958.80	7,190.00	58.62	58.30	77.32	1,522.11	1,407.38	114.73	13.267	0			
15,400.00	7,520.00	15,058.80	7,190.00	59.30	58.99	77.32	1,522.11	1,406.03	116.08	13.113	0			
15,500.00	7,520.00	15,158.80	7,190.00	59.99	59.68	77.32	1,522.11	1,404.69	117.43	12.962	0			
15,600.00	7,520.00	15,258.80	7,190.00	60.68	60.36	77.32	1,522.11	1,403.34	118.77	12.815	0			
15,700.00	7,520.00	15,358.80	7,190.00	61.36	61.05	77.32	1,522.11	1,401.99	120.12	12.671	0			
15,800.00	7,520.00	15,458.80	7,190.00	62.05	61.74	77.32	1,522.11	1,400.64	121.47	12.530	0			
15,900.00	7,520.00	15,558.80	7,190.00	62.74	62.43	77.32	1,522.11	1,399.29	122.82	12.393	0			
16,000.00	7,520.00	15,658.80	7,190.00	63.42	63.12	77.32	1,522.11	1,397.94	124.18	12.258	0			
16,100.00	7,520.00	15,758.80	7,190.00	64.11	63.81	77.32	1,522.11	1,396.59	125.53	12.126	0			
16,200.00	7,520.00	15,858.80	7,190.00	64.80	64.50	77.32	1,522.11	1,395.23	126.88	11.996	0			
16,300.00	7,520.00	15,958.80	7,190.00	65.49	65.19	77.32	1,522.11	1,393.88	128.23	11.870	0			
16,400.00	7,520.00	16,058.80	7,190.00	66.18	65.88	77.32	1,522.11	1,392.53	129.59	11.746	0			
16,500.00	7,520.00	16,158.80	7,190.00	66.86	66.57	77.32	1,522.11	1,391.17	130.94	11.624	0			
16,600.00	7,520.00	16,258.80	7,190.00	67.55	67.26	77.32	1,522.11	1,389.82	132.30	11.505	0			
16,700.00	7,520.00	16,358.80	7,190.00	68.24	67.95	77.32	1,522.11	1,388.46	133.65	11.389	0			
16,800.00	7,520.00	16,458.80	7,190.00	68.93	68.64	77.32	1,522.11	1,387.11	135.01	11.274	0			
16,900.00	7,520.00	16,558.80	7,190.00	69.62	69.33	77.32	1,522.11	1,385.75	136.36	11.162	0			
17,000.00	7,520.00	16,658.80	7,190.00	70.31	70.03	77.32	1,522.11	1,384.39	137.72	11.052	0			
17,100.00	7,520.00	16,758.80	7,190.00	71.00	70.72	77.32	1,522.11	1,383.04	139.08	10.944	0			
17,200.00	7,520.00	16,858.80	7,190.00	71.69	71.41	77.32	1,522.11	1,381.68	140.43	10.839	0			
17,300.00	7,520.00	16,958.80	7,190.00	72.39	72.10	77.32	1,522.11	1,380.32	141.79	10.735	0			
17,400.00	7,520.00	17,058.80	7,190.00	73.08	72.80	77.32	1,522.11	1,378.96	143.15	10.633	0			
17,500.00	7,520.00	17,158.80	7,190.00	73.77	73.49	77.32	1,522.11	1,377.60	144.51	10.533	0			
17,582.23	7,520.00	17,244.60	7,190.00	74.34	74.08	77.32	1,522.01	1,376.36	145.65	10.450	0		SF	

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



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
0.00	0.00	5.00	5.00	0.00	0.01	179.98	224.06				0		
100.00	100.00	105.00	105.00	0.15	0.16	179.98	224.06	223.76	0.30	742.059	0		
200.00	200.00	205.00	205.00	0.32	0.33	179.98	224.06	223.41	0.65	344.172	0		
300.00	300.00	305.00	305.00	0.50	0.50	179.98	224.06	223.06	1.00	224.042	0		
400.00	400.00	405.00	405.00	0.67	0.68	179.98	224.06	222.71	1.35	166.075	0		
500.00	500.00	505.00	505.00	0.84	0.85	179.98	224.06	222.36	1.70	131.939	0		
600.00	600.00	605.00	605.00	1.02	1.03	179.98	224.06	222.01	2.05	109.443	0		
664.91	664.91	669.91	669.91	1.13	1.14	179.98	224.06	221.79	2.27	98.537	0		CC
700.00	700.00	704.69	704.69	1.19	1.20	179.98	224.06	221.67	2.40	93.523	0		ES
800.00	799.98	800.00	799.98	1.37	1.37	-146.70	227.06	224.32	2.74	82.988	0		
900.00	899.84	891.61	891.46	1.54	1.53	-146.65	235.71	232.65	3.07	76.816	0		
1,000.00	999.45	983.94	983.47	1.72	1.69	-146.58	250.01	246.61	3.40	73.499	0		
1,100.00	1,098.70	1,074.95	1,073.88	1.90	1.86	-146.49	269.85	266.11	3.73	72.312	0		
1,161.05	1,159.06	1,129.69	1,128.08	2.01	1.96	-146.41	284.64	280.70	3.93	72.397	0		
1,200.00	1,197.51	1,164.30	1,162.27	2.08	2.02	-146.45	294.90	290.84	4.06	72.596	0		
1,300.00	1,296.22	1,254.51	1,251.08	2.27	2.19	-146.37	322.92	318.52	4.40	73.378	0		
1,400.00	1,394.92	1,350.31	1,345.25	2.45	2.37	-146.22	351.60	346.85	4.75	74.019	0		
1,500.00	1,493.63	1,446.10	1,439.42	2.64	2.55	-146.09	380.28	375.18	5.10	74.558	0		
1,600.00	1,592.34	1,541.90	1,533.59	2.83	2.73	-145.98	408.96	403.51	5.45	75.015	0		
1,700.00	1,691.05	1,637.69	1,627.76	3.02	2.91	-145.89	437.65	431.84	5.80	75.407	0		
1,800.00	1,789.76	1,733.49	1,721.93	3.21	3.10	-145.81	466.33	460.18	6.16	75.748	0		
1,900.00	1,888.46	1,829.29	1,816.10	3.40	3.28	-145.73	495.02	488.51	6.51	76.045	0		
2,000.00	1,987.17	1,925.08	1,910.27	3.59	3.47	-145.67	523.70	516.84	6.86	76.308	0		
2,100.00	2,085.88	2,020.88	2,004.44	3.78	3.66	-145.61	552.39	545.17	7.22	76.541	0		
2,200.00	2,184.59	2,116.67	2,098.60	3.97	3.84	-145.56	581.08	573.51	7.57	76.749	0		
2,300.00	2,283.29	2,212.47	2,192.77	4.16	4.03	-145.51	609.77	601.84	7.93	76.935	0		
2,400.00	2,382.00	2,308.26	2,286.94	4.35	4.22	-145.47	638.46	630.17	8.28	77.103	0		
2,500.00	2,480.71	2,404.06	2,381.11	4.54	4.41	-145.43	667.14	658.51	8.64	77.255	0		
2,600.00	2,579.42	2,499.85	2,475.28	4.74	4.60	-145.39	695.83	686.84	8.99	77.394	0		
2,700.00	2,678.13	2,595.65	2,569.45	4.93	4.78	-145.36	724.52	715.18	9.35	77.521	0		
2,800.00	2,776.83	2,691.45	2,663.62	5.12	4.97	-145.33	753.21	743.51	9.70	77.638	0		
2,900.00	2,875.54	2,787.24	2,757.79	5.31	5.16	-145.30	781.90	771.84	10.06	77.745	0		
3,000.00	2,974.25	2,883.04	2,851.96	5.50	5.35	-145.27	810.59	800.18	10.41	77.844	0		
3,100.00	3,072.96	2,978.83	2,946.13	5.70	5.54	-145.25	839.28	828.51	10.77	77.937	0		
3,200.00	3,171.66	3,074.63	3,040.30	5.89	5.73	-145.22	867.97	856.84	11.12	78.022	0		
3,300.00	3,270.37	3,170.42	3,134.47	6.08	5.92	-145.20	896.66	885.18	11.48	78.102	0		
3,400.00	3,369.08	3,266.22	3,228.64	6.27	6.11	-145.18	925.35	913.51	11.84	78.176	0		
3,500.00	3,467.79	3,362.01	3,322.81	6.47	6.30	-145.16	954.04	941.85	12.19	78.246	0		
3,600.00	3,566.50	3,457.81	3,416.98	6.66	6.49	-145.14	982.73	970.18	12.55	78.311	0		
3,700.00	3,665.20	3,553.60	3,511.15	6.85	6.68	-145.13	1,011.42	998.52	12.91	78.372	0		
3,800.00	3,763.91	3,649.40	3,605.32	7.05	6.87	-145.11	1,040.11	1,026.85	13.26	78.430	0		
3,900.00	3,862.62	3,745.20	3,699.49	7.24	7.06	-145.10	1,068.80	1,055.18	13.62	78.485	0		
4,000.00	3,961.33	3,840.99	3,793.66	7.43	7.25	-145.08	1,097.49	1,083.52	13.97	78.536	0		
4,100.00	4,060.03	3,936.79	3,887.83	7.62	7.44	-145.07	1,126.18	1,111.85	14.33	78.585	0		
4,200.00	4,158.74	4,032.58	3,982.00	7.82	7.63	-145.05	1,154.87	1,140.19	14.69	78.631	0		
4,300.00	4,257.45	4,128.38	4,076.17	8.01	7.82	-145.04	1,183.56	1,168.52	15.04	78.675	0		
4,400.00	4,356.16	4,224.17	4,170.34	8.20	8.01	-145.03	1,212.26	1,196.85	15.40	78.716	0		
4,500.00	4,454.87	4,319.97	4,264.51	8.40	8.20	-145.02	1,240.95	1,225.19	15.76	78.756	0		
4,600.00	4,553.57	4,415.76	4,358.68	8.59	8.39	-145.01	1,269.64	1,253.52	16.11	78.793	0		
4,700.00	4,652.28	4,511.56	4,452.85	8.78	8.58	-145.00	1,298.33	1,281.86	16.47	78.829	0		
4,800.00	4,750.99	4,607.36	4,547.01	8.98	8.77	-144.99	1,327.02	1,310.19	16.83	78.863	0		
4,900.00	4,849.70	4,703.15	4,641.18	9.17	8.96	-144.98	1,355.71	1,338.53	17.18	78.896	0		
5,000.00	4,948.40	4,798.95	4,735.35	9.36	9.15	-144.97	1,384.40	1,366.86	17.54	78.927	0		
5,100.00	5,047.11	4,894.74	4,829.52	9.56	9.34	-144.96	1,413.09	1,395.19	17.90	78.957	0		

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



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 11 - Original Hole - Rev 0		Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder													Offset Well Error: 0.00 usft			
Reference		Offset		Semi Major Axis		Distance							Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision				
5,200.00	5,145.82	4,990.54	4,923.69	9.75	9.53	-144.95	1,441.78	1,423.53	18.25	78.986	0					
5,300.00	5,244.53	5,086.33	5,017.86	9.94	9.72	-144.95	1,470.47	1,451.86	18.61	79.014	0					
5,400.00	5,343.24	5,182.13	5,112.03	10.14	9.91	-144.94	1,499.17	1,480.20	18.97	79.040	0					
5,500.00	5,441.94	5,277.92	5,206.20	10.33	10.10	-144.93	1,527.86	1,508.53	19.32	79.065	0					
5,600.00	5,540.65	5,373.72	5,300.37	10.52	10.29	-144.92	1,556.55	1,536.87	19.68	79.090	0					
5,700.00	5,639.36	5,469.52	5,394.54	10.72	10.48	-144.92	1,585.24	1,565.20	20.04	79.113	0					
5,800.00	5,738.07	5,565.31	5,488.71	10.91	10.67	-144.91	1,613.93	1,593.54	20.39	79.136	0					
5,900.00	5,836.77	5,661.11	5,582.88	11.10	10.86	-144.90	1,642.62	1,621.87	20.75	79.158	0					
6,000.00	5,935.48	5,756.90	5,677.05	11.30	11.05	-144.90	1,671.31	1,650.20	21.11	79.179	0					
6,100.00	6,034.19	5,852.70	5,771.22	11.49	11.24	-144.89	1,700.00	1,678.54	21.47	79.199	0					
6,200.00	6,132.90	5,948.49	5,865.39	11.68	11.43	-144.89	1,728.70	1,706.87	21.82	79.218	0					
6,300.00	6,231.61	6,080.28	5,995.08	11.88	11.69	-144.89	1,757.06	1,734.81	22.24	78.998	0					
6,393.93	6,324.32	6,274.35	6,187.56	12.06	12.04	-145.07	1,779.52	1,756.77	22.75	78.210	0					
6,400.00	6,330.31	6,287.07	6,200.23	12.07	12.07	-145.10	1,780.79	1,758.00	22.79	78.138	0					
6,500.00	6,429.31	6,499.33	6,412.15	12.26	12.42	-145.66	1,796.81	1,773.42	23.39	76.826	0					
6,600.00	6,528.74	6,620.92	6,533.74	12.44	12.61	-145.99	1,805.73	1,781.92	23.81	75.826	0					
6,700.00	6,628.48	6,722.19	6,634.79	12.61	12.77	-146.35	1,811.64	1,787.45	24.18	74.922	0					
6,800.00	6,728.41	6,819.58	6,730.05	12.77	12.90	-147.07	1,814.71	1,790.20	24.51	74.049	0					
6,854.98	6,783.38	6,870.01	6,777.90	12.86	12.96	179.12	1,815.35	1,789.95	25.40	71.461	0					
6,900.00	6,828.40	6,909.27	6,814.19	12.93	13.01	178.65	1,815.71	1,790.18	25.54	71.093	0					
6,954.98	6,883.38	6,954.42	6,854.68	13.02	13.06	178.02	1,816.51	1,790.80	25.70	70.675	0					
7,000.00	6,928.37	6,989.71	6,885.29	13.09	13.10	87.42	1,817.45	1,792.39	25.06	72.533	0					
7,050.00	6,978.05	7,028.08	6,917.41	13.17	13.14	86.76	1,818.74	1,793.56	25.18	72.236	0					
7,100.00	7,027.15	7,065.68	6,947.60	13.24	13.19	86.11	1,820.24	1,794.94	25.29	71.965	0					
7,150.00	7,075.37	7,100.00	6,973.97	13.30	13.23	85.51	1,821.92	1,796.52	25.40	71.727	0					
7,200.00	7,122.40	7,138.93	7,002.39	13.37	13.27	84.86	1,823.74	1,798.23	25.51	71.492	0					
7,250.00	7,167.96	7,174.73	7,027.05	13.43	13.31	84.26	1,825.67	1,800.06	25.61	71.281	0					
7,300.00	7,211.76	7,210.07	7,049.91	13.49	13.35	83.69	1,827.67	1,801.96	25.71	71.082	0					
7,350.00	7,253.54	7,250.00	7,073.91	13.55	13.40	83.09	1,829.71	1,803.90	25.82	70.876	0					
7,400.00	7,293.04	7,279.56	7,090.36	13.61	13.44	82.63	1,831.73	1,805.82	25.91	70.702	0					
7,450.00	7,330.01	7,313.80	7,107.97	13.67	13.49	82.14	1,833.72	1,807.72	26.01	70.510	0					
7,500.00	7,364.22	7,350.00	7,124.84	13.73	13.54	81.68	1,835.65	1,809.54	26.11	70.300	0					
7,550.00	7,395.48	7,381.48	7,138.01	13.79	13.59	81.28	1,837.47	1,811.26	26.22	70.090	0					
7,600.00	7,423.57	7,414.98	7,150.45	13.86	13.64	80.91	1,839.17	1,812.84	26.33	69.851	0					
7,650.00	7,448.34	7,450.00	7,161.69	13.93	13.70	80.57	1,840.72	1,814.26	26.46	69.574	0					
7,700.00	7,469.62	7,481.47	7,170.23	14.01	13.75	80.29	1,842.09	1,815.50	26.59	69.276	0					
7,750.00	7,487.29	7,514.51	7,177.56	14.09	13.81	80.05	1,843.27	1,816.54	26.74	68.937	0					
7,800.00	7,501.23	7,550.00	7,183.57	14.18	13.88	79.84	1,844.25	1,817.34	26.91	68.544	0					
7,850.00	7,511.36	7,580.31	7,187.15	14.28	13.95	79.70	1,844.99	1,817.91	27.08	68.130	0					
7,900.00	7,517.63	7,613.11	7,189.41	14.38	14.02	79.60	1,845.50	1,818.22	27.27	67.663	0					
7,954.98	7,520.00	7,653.65	7,190.00	14.51	14.11	79.54	1,845.76	1,818.24	27.52	67.068	0					
8,000.00	7,520.00	7,698.67	7,190.00	14.63	14.23	79.54	1,845.76	1,818.00	27.77	66.469	0					
8,100.00	7,520.00	7,798.67	7,190.00	14.90	14.51	79.54	1,845.76	1,817.40	28.36	65.076	0					
8,200.00	7,520.00	7,898.67	7,190.00	15.22	14.82	79.54	1,845.76	1,816.75	29.01	63.622	0					
8,300.00	7,520.00	7,998.68	7,190.00	15.56	15.16	79.54	1,845.76	1,816.05	29.71	62.124	0					
8,400.00	7,520.00	8,098.68	7,190.00	15.92	15.53	79.54	1,845.76	1,815.31	30.46	60.602	0					
8,500.00	7,520.00	8,198.68	7,190.00	16.31	15.92	79.54	1,845.76	1,814.52	31.25	59.069	0					
8,600.00	7,520.00	8,298.68	7,190.00	16.72	16.34	79.54	1,845.76	1,813.68	32.08	57.538	0					
8,700.00	7,520.00	8,398.68	7,190.00	17.15	16.77	79.54	1,845.76	1,812.82	32.95	56.021	0					
8,800.00	7,520.00	8,498.68	7,190.00	17.59	17.22	79.54	1,845.76	1,811.91	33.85	54.526	0					
8,900.00	7,520.00	8,598.68	7,190.00	18.05	17.69	79.54	1,845.76	1,810.98	34.79	53.060	0					
9,000.00	7,520.00	8,698.68	7,190.00	18.53	18.17	79.54	1,845.76	1,810.01	35.75	51.628	0					
9,100.00	7,520.00	8,798.68	7,190.00	19.02	18.67	79.54	1,845.76	1,809.02	36.74	50.235	0					
9,200.00	7,520.00	8,898.68	7,190.00	19.53	19.18	79.54	1,845.76	1,808.00	37.76	48.882	0					

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



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
9,300.00	7,520.00	8,998.68	7,190.00	20.04	19.70	79.54	1,845.76	1,806.96	38.80	47.572	0		
9,400.00	7,520.00	9,098.68	7,190.00	20.57	20.23	79.54	1,845.76	1,805.90	39.86	46.305	0		
9,500.00	7,520.00	9,198.68	7,190.00	21.11	20.77	79.54	1,845.76	1,804.82	40.94	45.083	0		
9,600.00	7,520.00	9,298.68	7,190.00	21.65	21.32	79.54	1,845.76	1,803.72	42.04	43.904	0		
9,700.00	7,520.00	9,398.68	7,190.00	22.21	21.88	79.54	1,845.76	1,802.60	43.16	42.769	0		
9,800.00	7,520.00	9,498.68	7,190.00	22.77	22.45	79.54	1,845.76	1,801.47	44.29	41.677	0		
9,900.00	7,520.00	9,598.69	7,190.00	23.34	23.03	79.54	1,845.76	1,800.33	45.43	40.627	0		
10,000.00	7,520.00	9,698.69	7,190.00	23.92	23.61	79.54	1,845.76	1,799.17	46.59	39.616	0		
10,100.00	7,520.00	9,798.69	7,190.00	24.51	24.20	79.54	1,845.76	1,797.99	47.76	38.645	0		
10,200.00	7,520.00	9,898.69	7,190.00	25.10	24.79	79.54	1,845.76	1,796.81	48.94	37.712	0		
10,300.00	7,520.00	9,998.69	7,190.00	25.69	25.39	79.54	1,845.75	1,795.62	50.14	36.815	0		
10,400.00	7,520.00	10,098.69	7,190.00	26.29	26.00	79.54	1,845.75	1,794.41	51.34	35.952	0		
10,500.00	7,520.00	10,198.69	7,190.00	26.90	26.61	79.54	1,845.75	1,793.20	52.55	35.123	0		
10,600.00	7,520.00	10,298.69	7,190.00	27.51	27.23	79.54	1,845.75	1,791.98	53.77	34.326	0		
10,700.00	7,520.00	10,398.69	7,190.00	28.13	27.84	79.54	1,845.75	1,790.75	55.00	33.560	0		
10,800.00	7,520.00	10,498.69	7,190.00	28.75	28.47	79.54	1,845.75	1,789.51	56.24	32.822	0		
10,900.00	7,520.00	10,598.69	7,190.00	29.37	29.09	79.54	1,845.75	1,788.27	57.48	32.112	0		
11,000.00	7,520.00	10,698.69	7,190.00	30.00	29.72	79.54	1,845.75	1,787.02	58.73	31.429	0		
11,100.00	7,520.00	10,798.69	7,190.00	30.63	30.36	79.54	1,845.75	1,785.76	59.98	30.772	0		
11,200.00	7,520.00	10,898.69	7,190.00	31.26	30.99	79.54	1,845.75	1,784.50	61.24	30.138	0		
11,300.00	7,520.00	10,998.69	7,190.00	31.90	31.63	79.54	1,845.74	1,783.23	62.51	29.527	0		
11,400.00	7,520.00	11,098.70	7,190.00	32.54	32.28	79.54	1,845.74	1,781.96	63.78	28.939	0		
11,500.00	7,520.00	11,198.70	7,190.00	33.18	32.92	79.54	1,845.74	1,780.68	65.06	28.371	0		
11,600.00	7,520.00	11,298.70	7,190.00	33.82	33.57	79.54	1,845.74	1,779.40	66.34	27.823	0		
11,700.00	7,520.00	11,398.70	7,190.00	34.47	34.22	79.54	1,845.74	1,778.12	67.62	27.294	0		
11,800.00	7,520.00	11,498.70	7,190.00	35.12	34.87	79.54	1,845.74	1,776.82	68.91	26.784	0		
11,900.00	7,520.00	11,598.70	7,190.00	35.77	35.52	79.54	1,845.74	1,775.53	70.21	26.290	0		
12,000.00	7,520.00	11,698.70	7,190.00	36.42	36.17	79.54	1,845.73	1,774.23	71.50	25.814	0		
12,100.00	7,520.00	11,798.70	7,190.00	37.07	36.83	79.54	1,845.73	1,772.93	72.80	25.353	0		
12,200.00	7,520.00	11,898.70	7,190.00	37.73	37.49	79.54	1,845.73	1,771.63	74.11	24.907	0		
12,300.00	7,520.00	11,998.70	7,190.00	38.39	38.15	79.54	1,845.73	1,770.32	75.41	24.475	0		
12,400.00	7,520.00	12,098.70	7,190.00	39.05	38.81	79.54	1,845.73	1,769.01	76.72	24.058	0		
12,500.00	7,520.00	12,198.70	7,190.00	39.71	39.47	79.54	1,845.73	1,767.69	78.03	23.653	0		
12,600.00	7,520.00	12,298.70	7,190.00	40.37	40.14	79.54	1,845.73	1,766.38	79.35	23.262	0		
12,700.00	7,520.00	12,398.70	7,190.00	41.04	40.80	79.54	1,845.72	1,765.06	80.66	22.882	0		
12,800.00	7,520.00	12,498.70	7,190.00	41.70	41.47	79.54	1,845.72	1,763.74	81.98	22.514	0		
12,900.00	7,520.00	12,598.71	7,190.00	42.37	42.14	79.54	1,845.72	1,762.42	83.30	22.156	0		
13,000.00	7,520.00	12,698.71	7,190.00	43.03	42.81	79.54	1,845.72	1,761.09	84.63	21.810	0		
13,100.00	7,520.00	12,798.71	7,190.00	43.70	43.48	79.54	1,845.72	1,759.76	85.95	21.473	0		
13,200.00	7,520.00	12,898.71	7,190.00	44.37	44.15	79.54	1,845.71	1,758.43	87.28	21.147	0		
13,300.00	7,520.00	12,998.71	7,190.00	45.04	44.82	79.54	1,845.71	1,757.10	88.61	20.829	0		
13,400.00	7,520.00	13,098.71	7,190.00	45.72	45.50	79.54	1,845.71	1,755.77	89.94	20.521	0		
13,500.00	7,520.00	13,198.71	7,190.00	46.39	46.17	79.54	1,845.71	1,754.43	91.27	20.221	0		
13,600.00	7,520.00	13,298.71	7,190.00	47.06	46.85	79.54	1,845.71	1,753.10	92.61	19.930	0		
13,700.00	7,520.00	13,398.71	7,190.00	47.74	47.52	79.54	1,845.70	1,751.76	93.95	19.647	0		
13,800.00	7,520.00	13,498.71	7,190.00	48.41	48.20	79.54	1,845.70	1,750.42	95.28	19.371	0		
13,900.00	7,520.00	13,598.71	7,190.00	49.09	48.88	79.54	1,845.70	1,749.08	96.62	19.102	0		
14,000.00	7,520.00	13,698.71	7,190.00	49.76	49.55	79.54	1,845.70	1,747.74	97.96	18.841	0		
14,100.00	7,520.00	13,798.71	7,190.00	50.44	50.23	79.54	1,845.70	1,746.39	99.30	18.586	0		
14,200.00	7,520.00	13,898.71	7,190.00	51.12	50.91	79.54	1,845.69	1,745.05	100.65	18.338	0		
14,300.00	7,520.00	13,998.71	7,190.00	51.80	51.59	79.54	1,845.69	1,743.70	101.99	18.096	0		
14,400.00	7,520.00	14,098.72	7,190.00	52.48	52.27	79.54	1,845.69	1,742.35	103.34	17.861	0		
14,500.00	7,520.00	14,198.72	7,190.00	53.16	52.95	79.54	1,845.69	1,741.00	104.68	17.631	0		
14,600.00	7,520.00	14,298.72	7,190.00	53.84	53.64	79.54	1,845.68	1,739.65	106.03	17.407	0		

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



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 11 - Original Hole - Rev 0		Offset Site Error:		0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:		0.00 usft		
Reference		Offset		Semi Major Axis			Distance						Warning				
Measured Depth	Vertical	Measured	Vertical	Reference	Offset	Highside	Between	Between	Minimum	Separation	Risked	Probability					
Depth (usft)	Depth (usft)	Depth (usft)	Depth (usft)			Toolface (°)	Centres (usft)	Ellipses (usft)	Separation (usft)	Factor	Separation Factor	of Collision					
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	(usft)	(usft)	(usft)								
14,700.00	7,520.00	14,398.72	7,190.00	54.52	54.32	79.54	1,845.68	1,738.30	107.38	17.188	0						
14,800.00	7,520.00	14,498.72	7,190.00	55.20	55.00	79.54	1,845.68	1,736.95	108.73	16.975	0						
14,900.00	7,520.00	14,598.72	7,190.00	55.89	55.69	79.54	1,845.68	1,735.60	110.08	16.767	0						
15,000.00	7,520.00	14,698.72	7,190.00	56.57	56.37	79.54	1,845.67	1,734.24	111.43	16.563	0						
15,100.00	7,520.00	14,798.72	7,190.00	57.25	57.05	79.54	1,845.67	1,732.89	112.78	16.365	0						
15,200.00	7,520.00	14,898.72	7,190.00	57.94	57.74	79.54	1,845.67	1,731.53	114.14	16.171	0						
15,300.00	7,520.00	14,998.72	7,190.00	58.62	58.42	79.54	1,845.67	1,730.17	115.49	15.981	0						
15,400.00	7,520.00	15,098.72	7,190.00	59.30	59.11	79.54	1,845.66	1,728.82	116.85	15.796	0						
15,500.00	7,520.00	15,198.72	7,190.00	59.99	59.80	79.54	1,845.66	1,727.46	118.20	15.614	0						
15,600.00	7,520.00	15,298.72	7,190.00	60.68	60.48	79.54	1,845.66	1,726.10	119.56	15.437	0						
15,700.00	7,520.00	15,398.72	7,190.00	61.36	61.17	79.54	1,845.66	1,724.74	120.92	15.264	0						
15,800.00	7,520.00	15,498.72	7,190.00	62.05	61.86	79.54	1,845.65	1,723.38	122.27	15.094	0						
15,900.00	7,520.00	15,598.73	7,190.00	62.74	62.55	79.54	1,845.65	1,722.02	123.63	14.928	0						
16,000.00	7,520.00	15,698.73	7,190.00	63.42	63.23	79.54	1,845.65	1,720.66	124.99	14.766	0						
16,100.00	7,520.00	15,798.73	7,190.00	64.11	63.92	79.54	1,845.64	1,719.29	126.35	14.607	0						
16,200.00	7,520.00	15,898.73	7,190.00	64.80	64.61	79.54	1,845.64	1,717.93	127.71	14.451	0						
16,300.00	7,520.00	15,998.73	7,190.00	65.49	65.30	79.54	1,845.64	1,716.56	129.07	14.299	0						
16,400.00	7,520.00	16,098.73	7,190.00	66.18	65.99	79.54	1,845.64	1,715.20	130.44	14.150	0						
16,500.00	7,520.00	16,198.73	7,190.00	66.86	66.68	79.54	1,845.63	1,713.83	131.80	14.004	0						
16,600.00	7,520.00	16,298.73	7,190.00	67.55	67.37	79.54	1,845.63	1,712.47	133.16	13.860	0						
16,700.00	7,520.00	16,398.73	7,190.00	68.24	68.06	79.54	1,845.63	1,711.10	134.52	13.720	0						
16,800.00	7,520.00	16,498.73	7,190.00	68.93	68.75	79.54	1,845.62	1,709.74	135.89	13.582	0						
16,900.00	7,520.00	16,598.73	7,190.00	69.62	69.44	79.54	1,845.62	1,708.37	137.25	13.447	0						
17,000.00	7,520.00	16,698.73	7,190.00	70.31	70.13	79.54	1,845.62	1,707.00	138.62	13.315	0						
17,100.00	7,520.00	16,798.73	7,190.00	71.00	70.82	79.54	1,845.61	1,705.63	139.98	13.185	0						
17,200.00	7,520.00	16,898.73	7,190.00	71.69	71.51	79.54	1,845.61	1,704.26	141.35	13.057	0						
17,300.00	7,520.00	16,998.73	7,190.00	72.39	72.21	79.54	1,845.61	1,702.89	142.71	12.932	0						
17,400.00	7,520.00	17,098.74	7,190.00	73.08	72.90	79.54	1,845.60	1,701.52	144.08	12.810	0						
17,500.00	7,520.00	17,198.74	7,190.00	73.77	73.59	79.54	1,845.60	1,700.15	145.45	12.689	0						
17,582.23	7,520.00	17,280.97	7,190.00	74.34	74.16	79.54	1,845.59	1,699.02	146.57	12.592	0	SF					

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



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder												Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	Warning
0.00	0.00	6.00	6.00	0.00	0.01	180.00	252.11				0		
100.00	100.00	106.00	106.00	0.15	0.16	180.00	252.11	251.81	0.30	830.170	0		
200.00	200.00	206.00	206.00	0.32	0.33	180.00	252.11	251.46	0.65	386.229	0		
300.00	300.00	306.00	306.00	0.50	0.51	180.00	252.11	251.11	1.00	251.655	0		
400.00	400.00	406.00	406.00	0.67	0.68	180.00	252.11	250.76	1.35	186.628	0		
500.00	500.00	506.00	506.00	0.84	0.86	180.00	252.11	250.41	1.70	148.306	0		
564.54	564.54	570.54	570.54	0.96	0.97	180.00	252.11	250.19	1.93	130.952	0		
600.00	600.00	605.57	605.57	1.02	1.03	180.00	252.12	250.07	2.05	123.088	0		CC
700.00	700.00	700.00	699.98	1.19	1.19	-179.82	253.72	251.34	2.39	106.265	0		ES
800.00	799.98	790.81	790.67	1.37	1.35	-146.18	259.63	256.91	2.72	95.447	0		
900.00	899.84	882.58	882.12	1.54	1.52	-145.87	271.28	268.23	3.05	88.850	0		
1,000.00	999.45	973.20	972.15	1.72	1.68	-145.61	288.59	285.20	3.38	85.295	0		
1,100.00	1,098.70	1,062.27	1,060.27	1.90	1.84	-145.38	311.44	307.73	3.71	83.943	0		
1,161.05	1,159.06	1,115.71	1,112.93	2.01	1.94	-145.26	328.07	324.16	3.91	83.947	0		
1,200.00	1,197.51	1,149.70	1,146.34	2.08	2.00	-145.29	339.51	335.47	4.04	84.080	0		
1,300.00	1,296.22	1,244.87	1,239.75	2.27	2.19	-145.34	369.38	365.00	4.39	84.221	0		
1,400.00	1,394.92	1,340.30	1,333.43	2.45	2.37	-145.39	399.26	394.52	4.74	84.315	0		
1,500.00	1,493.63	1,435.73	1,427.12	2.64	2.55	-145.42	429.13	424.05	5.09	84.380	0		
1,600.00	1,592.34	1,531.16	1,520.80	2.83	2.74	-145.46	459.01	453.57	5.44	84.426	0		
1,700.00	1,691.05	1,626.60	1,614.48	3.02	2.92	-145.49	488.89	483.10	5.79	84.456	0		
1,800.00	1,789.76	1,722.03	1,708.16	3.21	3.11	-145.51	518.76	512.62	6.14	84.476	0		
1,900.00	1,888.46	1,817.46	1,801.84	3.40	3.30	-145.53	548.64	542.15	6.49	84.489	0		
2,000.00	1,987.17	1,912.89	1,895.52	3.59	3.48	-145.55	578.52	571.67	6.85	84.496	0		
2,100.00	2,085.88	2,008.33	1,989.20	3.78	3.67	-145.57	608.39	601.19	7.20	84.498	0		
2,200.00	2,184.59	2,103.76	2,082.88	3.97	3.86	-145.59	638.27	630.71	7.55	84.498	0		
2,300.00	2,283.29	2,199.19	2,176.56	4.16	4.05	-145.60	668.14	660.24	7.91	84.494	0		
2,400.00	2,382.00	2,294.63	2,270.25	4.35	4.24	-145.62	698.02	689.76	8.26	84.490	0		
2,500.00	2,480.71	2,390.06	2,363.93	4.54	4.43	-145.63	727.90	719.28	8.62	84.483	0		
2,600.00	2,579.42	2,485.49	2,457.61	4.74	4.62	-145.64	757.77	748.80	8.97	84.476	0		
2,700.00	2,678.13	2,580.92	2,551.29	4.93	4.81	-145.65	787.65	778.33	9.32	84.468	0		
2,800.00	2,776.83	2,676.36	2,644.97	5.12	5.00	-145.66	817.53	807.85	9.68	84.460	0		
2,900.00	2,875.54	2,771.79	2,738.65	5.31	5.19	-145.67	847.40	837.37	10.03	84.451	0		
3,000.00	2,974.25	2,867.22	2,832.33	5.50	5.38	-145.68	877.28	866.89	10.39	84.443	0		
3,100.00	3,072.96	2,962.65	2,926.01	5.70	5.57	-145.69	907.16	896.41	10.74	84.434	0		
3,200.00	3,171.66	3,058.09	3,019.69	5.89	5.76	-145.69	937.03	925.93	11.10	84.425	0		
3,300.00	3,270.37	3,153.52	3,113.37	6.08	5.95	-145.70	966.91	955.46	11.45	84.416	0		
3,400.00	3,369.08	3,248.95	3,207.06	6.27	6.14	-145.71	996.79	984.98	11.81	84.407	0		
3,500.00	3,467.79	3,344.38	3,300.74	6.47	6.33	-145.71	1,026.66	1,014.50	12.16	84.398	0		
3,600.00	3,566.50	3,439.82	3,394.42	6.66	6.52	-145.72	1,056.54	1,044.02	12.52	84.389	0		
3,700.00	3,665.20	3,535.25	3,488.10	6.85	6.71	-145.72	1,086.42	1,073.54	12.88	84.381	0		
3,800.00	3,763.91	3,630.68	3,581.78	7.05	6.91	-145.73	1,116.29	1,103.06	13.23	84.373	0		
3,900.00	3,862.62	3,726.11	3,675.46	7.24	7.10	-145.73	1,146.17	1,132.58	13.59	84.365	0		
4,000.00	3,961.33	3,821.55	3,769.14	7.43	7.29	-145.74	1,176.05	1,162.11	13.94	84.357	0		
4,100.00	4,060.03	3,916.98	3,862.82	7.62	7.48	-145.74	1,205.92	1,191.63	14.30	84.349	0		
4,200.00	4,158.74	4,012.41	3,956.50	7.82	7.67	-145.75	1,235.80	1,221.15	14.65	84.341	0		
4,300.00	4,257.45	4,107.84	4,050.19	8.01	7.86	-145.75	1,265.68	1,250.67	15.01	84.334	0		
4,400.00	4,356.16	4,203.28	4,143.87	8.20	8.05	-145.76	1,295.55	1,280.19	15.36	84.327	0		
4,500.00	4,454.87	4,298.71	4,237.55	8.40	8.24	-145.76	1,325.43	1,309.71	15.72	84.319	0		
4,600.00	4,553.57	4,394.14	4,331.23	8.59	8.44	-145.76	1,355.31	1,339.23	16.07	84.313	0		
4,700.00	4,652.28	4,489.57	4,424.91	8.78	8.63	-145.77	1,385.18	1,368.75	16.43	84.306	0		
4,800.00	4,750.99	4,585.01	4,518.59	8.98	8.82	-145.77	1,415.06	1,398.28	16.79	84.299	0		
4,900.00	4,849.70	4,680.44	4,612.27	9.17	9.01	-145.77	1,444.94	1,427.80	17.14	84.293	0		
5,000.00	4,948.40	4,775.87	4,705.95	9.36	9.20	-145.78	1,474.82	1,457.32	17.50	84.287	0		
5,100.00	5,047.11	4,871.30	4,799.63	9.56	9.39	-145.78	1,504.69	1,486.84	17.85	84.281	0		

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



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 12 - Original Hole - Rev 0		Offset Site Error:		0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:		0.00 usft		
Reference		Offset		Semi Major Axis		Distance							Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision					
5,200.00	5,145.82	4,966.74	4,893.31	9.75	9.58	-145.78	1,534.57	1,516.36	18.21	84.275	0						
5,300.00	5,244.53	5,062.17	4,987.00	9.94	9.78	-145.78	1,564.45	1,545.88	18.56	84.269	0						
5,400.00	5,343.24	5,157.60	5,080.68	10.14	9.97	-145.79	1,594.32	1,575.40	18.92	84.264	0						
5,500.00	5,441.94	5,253.03	5,174.36	10.33	10.16	-145.79	1,624.20	1,604.92	19.28	84.258	0						
5,600.00	5,540.65	5,348.47	5,268.04	10.52	10.35	-145.79	1,654.08	1,634.44	19.63	84.253	0						
5,700.00	5,639.36	5,443.90	5,361.72	10.72	10.54	-145.79	1,683.95	1,663.96	19.99	84.248	0						
5,800.00	5,738.07	5,539.33	5,455.40	10.91	10.73	-145.80	1,713.83	1,693.49	20.34	84.243	0						
5,900.00	5,836.77	5,634.76	5,549.08	11.10	10.92	-145.80	1,743.71	1,723.01	20.70	84.238	0						
6,000.00	5,935.48	5,730.20	5,642.76	11.30	11.12	-145.80	1,773.58	1,752.53	21.06	84.233	0						
6,100.00	6,034.19	5,825.63	5,736.44	11.49	11.31	-145.80	1,803.46	1,782.05	21.41	84.228	0						
6,200.00	6,132.90	5,921.06	5,830.13	11.68	11.50	-145.80	1,833.34	1,811.57	21.77	84.224	0						
6,300.00	6,231.61	6,016.49	5,923.81	11.88	11.69	-145.81	1,863.21	1,841.09	22.12	84.219	0						
6,393.93	6,324.32	6,106.13	6,011.80	12.06	11.87	-145.81	1,891.28	1,868.82	22.46	84.215	0						
6,400.00	6,330.31	6,111.93	6,017.49	12.07	11.88	-145.83	1,893.09	1,870.60	22.48	84.201	0						
6,500.00	6,429.31	6,207.82	6,111.62	12.26	12.08	-146.13	1,921.41	1,898.52	22.89	83.939	0						
6,600.00	6,528.74	6,304.46	6,206.48	12.44	12.27	-146.33	1,946.95	1,923.66	23.29	83.613	0						
6,700.00	6,628.48	6,504.35	6,403.57	12.61	12.65	-146.33	1,967.95	1,944.10	23.85	82.516	0						
6,800.00	6,728.41	6,759.14	6,657.27	12.77	13.09	-146.30	1,978.82	1,954.34	24.48	80.827	0						
6,854.98	6,783.38	6,891.29	6,789.38	12.86	13.30	-179.59	1,980.21	1,954.50	25.71	77.021	0						
6,900.00	6,828.40	6,936.32	6,834.40	12.93	13.37	-179.59	1,980.21	1,954.36	25.86	76.585	0						
6,954.98	6,883.38	6,991.43	6,889.52	13.02	13.46	-179.59	1,980.21	1,954.18	26.04	76.058	0						
7,000.00	6,928.37	7,037.47	6,935.50	13.09	13.53	90.40	1,980.21	1,954.92	25.29	78.311	0						
7,050.00	6,978.05	7,088.55	6,986.19	13.17	13.60	90.38	1,980.21	1,954.77	25.44	77.838	0						
7,100.00	7,027.15	7,139.58	7,036.16	13.24	13.67	90.36	1,980.20	1,954.62	25.59	77.395	0						
7,150.00	7,075.37	7,190.55	7,085.10	13.30	13.74	90.34	1,980.20	1,954.47	25.72	76.978	0						
7,200.00	7,122.40	7,241.45	7,132.68	13.37	13.80	90.32	1,980.19	1,954.34	25.86	76.582	0						
7,250.00	7,167.96	7,292.28	7,178.60	13.43	13.86	90.29	1,980.19	1,954.20	25.99	76.204	0						
7,300.00	7,211.76	7,343.03	7,222.58	13.49	13.92	90.26	1,980.18	1,954.07	26.11	75.838	0						
7,350.00	7,253.54	7,393.70	7,264.34	13.55	13.97	90.23	1,980.18	1,953.94	26.23	75.479	0						
7,400.00	7,293.04	7,444.28	7,303.63	13.61	14.03	90.20	1,980.17	1,953.81	26.36	75.120	0						
7,450.00	7,330.01	7,494.78	7,340.19	13.67	14.09	90.17	1,980.17	1,953.68	26.49	74.756	0						
7,500.00	7,364.22	7,545.18	7,373.83	13.73	14.15	90.14	1,980.17	1,953.54	26.62	74.379	0						
7,550.00	7,395.48	7,595.49	7,404.34	13.79	14.21	90.10	1,980.16	1,953.40	26.76	73.985	0						
7,600.00	7,423.57	7,645.70	7,431.56	13.86	14.28	90.07	1,980.16	1,953.25	26.92	73.567	0						
7,650.00	7,448.34	7,695.82	7,455.32	13.93	14.35	90.03	1,980.16	1,953.08	27.08	73.121	0						
7,700.00	7,469.62	7,745.85	7,475.50	14.01	14.42	90.00	1,980.16	1,952.90	27.26	72.644	0						
7,713.84	7,474.88	7,759.68	7,480.44	14.03	14.44	89.99	1,980.16	1,952.78	27.38	72.309	0						
7,750.00	7,487.29	7,795.77	7,492.00	14.09	14.50	89.96	1,980.16	1,952.71	27.45	72.133	0						
7,800.00	7,501.23	7,845.61	7,504.74	14.18	14.59	89.93	1,980.16	1,952.50	27.66	71.587	0						
7,850.00	7,511.36	7,895.34	7,513.66	14.28	14.68	89.89	1,980.16	1,952.28	27.89	71.008	0						
7,900.00	7,517.63	7,944.99	7,518.72	14.38	14.79	89.86	1,980.16	1,952.04	28.13	70.398	0						
7,954.98	7,520.00	7,999.62	7,520.00	14.51	14.91	89.83	1,980.17	1,951.76	28.41	69.696	0						
8,000.00	7,520.00	8,044.64	7,520.00	14.63	15.02	89.83	1,980.17	1,951.51	28.66	69.088	0						
8,100.00	7,520.00	8,144.64	7,520.00	14.90	15.29	89.83	1,980.17	1,950.92	29.25	67.697	0						
8,200.00	7,520.00	8,244.64	7,520.00	15.22	15.58	89.83	1,980.17	1,950.27	29.89	66.239	0						
8,300.00	7,520.00	8,344.64	7,520.00	15.56	15.91	89.83	1,980.17	1,949.58	30.59	64.735	0						
8,400.00	7,520.00	8,444.64	7,520.00	15.92	16.27	89.83	1,980.16	1,948.83	31.33	63.200	0						
8,500.00	7,520.00	8,544.64	7,520.00	16.31	16.65	89.83	1,980.16	1,948.05	32.12	61.652	0						
8,600.00	7,520.00	8,644.64	7,520.00	16.72	17.05	89.83	1,980.16	1,947.22	32.95	60.101	0						
8,700.00	7,520.00	8,744.64	7,520.00	17.15	17.47	89.83	1,980.16	1,946.35	33.81	58.561	0						
8,800.00	7,520.00	8,844.64	7,520.00	17.59	17.91	89.83	1,980.16	1,945.45	34.72	57.039	0						
8,900.00	7,520.00	8,944.64	7,520.00	18.05	18.36	89.83	1,980.16	1,944.51	35.65	55.543	0						
9,000.00	7,520.00	9,044.64	7,520.00	18.53	18.84	89.83	1,980.16	1,943.55	36.62	54.079	0						
9,100.00	7,520.00	9,144.64	7,520.00	19.02	19.32	89.83	1,980.16	1,942.55	37.61	52.651	0						

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



Schlumberger

Anticollision Risk Report



Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 12 - Original Hole - Rev 0		Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder														Offset Well Error: 0.00 usft		
Reference		Offset		Semi Major Axis		Distance							Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision				
9,200.00	7,520.00	9,244.64	7,520.00	19.53	19.82	89.83	1,980.16	1,941.53	38.63	51.263	0					
9,300.00	7,520.00	9,344.64	7,520.00	20.04	20.33	89.83	1,980.16	1,940.49	39.67	49.915	0					
9,400.00	7,520.00	9,444.64	7,520.00	20.57	20.85	89.83	1,980.16	1,939.42	40.73	48.611	0					
9,500.00	7,520.00	9,544.64	7,520.00	21.11	21.38	89.83	1,980.16	1,938.34	41.82	47.350	0					
9,600.00	7,520.00	9,644.64	7,520.00	21.65	21.92	89.83	1,980.16	1,937.23	42.92	46.133	0					
9,700.00	7,520.00	9,744.64	7,520.00	22.21	22.47	89.83	1,980.16	1,936.11	44.04	44.959	0					
9,800.00	7,520.00	9,844.64	7,520.00	22.77	23.03	89.83	1,980.16	1,934.98	45.18	43.828	0					
9,900.00	7,520.00	9,944.64	7,520.00	23.34	23.60	89.83	1,980.16	1,933.82	46.33	42.738	0					
10,000.00	7,520.00	10,044.64	7,520.00	23.92	24.17	89.83	1,980.15	1,932.66	47.50	41.690	0					
10,100.00	7,520.00	10,144.64	7,520.00	24.51	24.75	89.83	1,980.15	1,931.48	48.68	40.681	0					
10,200.00	7,520.00	10,244.64	7,520.00	25.10	25.34	89.83	1,980.15	1,930.29	49.87	39.710	0					
10,300.00	7,520.00	10,344.64	7,520.00	25.69	25.93	89.83	1,980.15	1,929.09	51.07	38.776	0					
10,400.00	7,520.00	10,444.64	7,520.00	26.29	26.53	89.83	1,980.15	1,927.87	52.28	37.877	0					
10,500.00	7,520.00	10,544.64	7,520.00	26.90	27.13	89.83	1,980.15	1,926.65	53.50	37.013	0					
10,600.00	7,520.00	10,644.64	7,520.00	27.51	27.74	89.83	1,980.15	1,925.42	54.73	36.181	0					
10,700.00	7,520.00	10,744.64	7,520.00	28.13	28.35	89.83	1,980.15	1,924.18	55.97	35.380	0					
10,800.00	7,520.00	10,844.64	7,520.00	28.75	28.97	89.83	1,980.15	1,922.94	57.21	34.610	0					
10,900.00	7,520.00	10,944.64	7,520.00	29.37	29.59	89.83	1,980.15	1,921.68	58.47	33.868	0					
11,000.00	7,520.00	11,044.64	7,520.00	30.00	30.21	89.83	1,980.15	1,920.42	59.73	33.153	0					
11,100.00	7,520.00	11,144.64	7,520.00	30.63	30.84	89.83	1,980.15	1,919.15	60.99	32.465	0					
11,200.00	7,520.00	11,244.64	7,520.00	31.26	31.47	89.83	1,980.15	1,917.88	62.27	31.801	0					
11,300.00	7,520.00	11,344.64	7,520.00	31.90	32.10	89.83	1,980.15	1,916.60	63.54	31.162	0					
11,400.00	7,520.00	11,444.64	7,520.00	32.54	32.74	89.83	1,980.15	1,915.32	64.83	30.544	0					
11,500.00	7,520.00	11,544.64	7,520.00	33.18	33.38	89.83	1,980.15	1,914.03	66.12	29.949	0					
11,600.00	7,520.00	11,644.64	7,520.00	33.82	34.02	89.83	1,980.15	1,912.73	67.41	29.374	0					
11,700.00	7,520.00	11,744.64	7,520.00	34.47	34.66	89.83	1,980.14	1,911.44	68.71	28.820	0					
11,800.00	7,520.00	11,844.64	7,520.00	35.12	35.31	89.83	1,980.14	1,910.13	70.01	28.284	0					
11,900.00	7,520.00	11,944.64	7,520.00	35.77	35.96	89.83	1,980.14	1,908.83	71.32	27.766	0					
12,000.00	7,520.00	12,044.64	7,520.00	36.42	36.61	89.83	1,980.14	1,907.52	72.63	27.265	0					
12,100.00	7,520.00	12,144.64	7,520.00	37.07	37.26	89.83	1,980.14	1,906.20	73.94	26.780	0					
12,200.00	7,520.00	12,244.64	7,520.00	37.73	37.91	89.83	1,980.14	1,904.88	75.26	26.312	0					
12,300.00	7,520.00	12,344.64	7,520.00	38.39	38.57	89.83	1,980.14	1,903.56	76.58	25.858	0					
12,400.00	7,520.00	12,444.64	7,520.00	39.05	39.23	89.83	1,980.14	1,902.24	77.90	25.419	0					
12,500.00	7,520.00	12,544.64	7,520.00	39.71	39.89	89.83	1,980.14	1,900.91	79.23	24.994	0					
12,600.00	7,520.00	12,644.64	7,520.00	40.37	40.55	89.83	1,980.14	1,899.58	80.55	24.581	0					
12,700.00	7,520.00	12,744.64	7,520.00	41.04	41.21	89.83	1,980.14	1,898.25	81.89	24.182	0					
12,800.00	7,520.00	12,844.64	7,520.00	41.70	41.87	89.83	1,980.14	1,896.92	83.22	23.794	0					
12,900.00	7,520.00	12,944.64	7,520.00	42.37	42.54	89.83	1,980.14	1,895.58	84.56	23.418	0					
13,000.00	7,520.00	13,044.64	7,520.00	43.03	43.20	89.83	1,980.14	1,894.24	85.89	23.053	0					
13,100.00	7,520.00	13,144.64	7,520.00	43.70	43.87	89.83	1,980.14	1,892.90	87.24	22.699	0					
13,200.00	7,520.00	13,244.64	7,520.00	44.37	44.54	89.83	1,980.14	1,891.56	88.58	22.355	0					
13,300.00	7,520.00	13,344.64	7,520.00	45.04	45.21	89.83	1,980.13	1,890.21	89.92	22.020	0					
13,400.00	7,520.00	13,444.64	7,520.00	45.72	45.88	89.83	1,980.13	1,888.86	91.27	21.695	0					
13,500.00	7,520.00	13,544.64	7,520.00	46.39	46.55	89.83	1,980.13	1,887.52	92.62	21.380	0					
13,600.00	7,520.00	13,644.64	7,520.00	47.06	47.22	89.83	1,980.13	1,886.16	93.97	21.072	0					
13,700.00	7,520.00	13,744.64	7,520.00	47.74	47.89	89.83	1,980.13	1,884.81	95.32	20.774	0					
13,800.00	7,520.00	13,844.64	7,520.00	48.41	48.57	89.83	1,980.13	1,883.46	96.67	20.483	0					
13,900.00	7,520.00	13,944.64	7,520.00	49.09	49.24	89.83	1,980.13	1,882.10	98.03	20.200	0					
14,000.00	7,520.00	14,044.64	7,520.00	49.76	49.92	89.83	1,980.13	1,880.75	99.38	19.924	0					
14,100.00	7,520.00	14,144.64	7,520.00	50.44	50.59	89.83	1,980.13	1,879.39	100.74	19.655	0					
14,200.00	7,520.00	14,244.64	7,520.00	51.12	51.27	89.83	1,980.13	1,878.03	102.10	19.394	0					
14,300.00	7,520.00	14,344.64	7,520.00	51.80	51.95	89.83	1,980.13	1,876.67	103.46	19.139	0					
14,400.00	7,520.00	14,444.64	7,520.00	52.48	52.63	89.83	1,980.13	1,875.30	104.82	18.890	0					
14,500.00	7,520.00	14,544.64	7,520.00	53.16	53.30	89.83	1,980.13	1,873.94	106.19	18.648	0					

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



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 12 - Original Hole - Rev 0		Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder													Offset Well Error: 0.00 usft			
Reference		Offset		Semi Major Axis			Distance						Warning			
Measured Depth	Vertical	Measured	Vertical	Reference	Offset	Highside	Between	Between	Minimum	Separation	Risked	Probability				
Depth (usft)	Depth (usft)	Depth (usft)	Depth (usft)			Toolface (°)	Centres (usft)	Ellipses (usft)	Separation (usft)	Factor	Separation Factor	of Collision				
14,600.00	7,520.00	14,644.64	7,520.00	53.84	53.98	89.83	1,980.13	1,872.58	107.55	18.411	0					
14,700.00	7,520.00	14,744.64	7,520.00	54.52	54.66	89.83	1,980.13	1,871.21	108.91	18.181	0					
14,800.00	7,520.00	14,844.64	7,520.00	55.20	55.35	89.83	1,980.13	1,869.84	110.28	17.955	0					
14,900.00	7,520.00	14,944.64	7,520.00	55.89	56.03	89.83	1,980.12	1,868.48	111.65	17.735	0					
15,000.00	7,520.00	15,044.64	7,520.00	56.57	56.71	89.83	1,980.12	1,867.11	113.02	17.521	0					
15,100.00	7,520.00	15,144.64	7,520.00	57.25	57.39	89.83	1,980.12	1,865.74	114.38	17.311	0					
15,200.00	7,520.00	15,244.64	7,520.00	57.94	58.07	89.83	1,980.12	1,864.37	115.75	17.106	0					
15,300.00	7,520.00	15,344.64	7,520.00	58.62	58.76	89.83	1,980.12	1,863.00	117.13	16.906	0					
15,400.00	7,520.00	15,444.64	7,520.00	59.30	59.44	89.83	1,980.12	1,861.62	118.50	16.710	0					
15,500.00	7,520.00	15,544.64	7,520.00	59.99	60.13	89.83	1,980.12	1,860.25	119.87	16.519	0					
15,600.00	7,520.00	15,644.64	7,520.00	60.68	60.81	89.83	1,980.12	1,858.88	121.24	16.332	0					
15,700.00	7,520.00	15,744.64	7,520.00	61.36	61.50	89.83	1,980.12	1,857.50	122.62	16.149	0					
15,800.00	7,520.00	15,844.64	7,520.00	62.05	62.18	89.83	1,980.12	1,856.13	123.99	15.970	0					
15,900.00	7,520.00	15,944.64	7,520.00	62.74	62.87	89.83	1,980.12	1,854.75	125.37	15.795	0					
16,000.00	7,520.00	16,044.64	7,520.00	63.42	63.55	89.83	1,980.12	1,853.37	126.74	15.623	0					
16,100.00	7,520.00	16,144.64	7,520.00	64.11	64.24	89.83	1,980.12	1,852.00	128.12	15.455	0					
16,200.00	7,520.00	16,244.64	7,520.00	64.80	64.93	89.83	1,980.12	1,850.62	129.50	15.291	0					
16,300.00	7,520.00	16,344.64	7,520.00	65.49	65.62	89.83	1,980.12	1,849.24	130.88	15.130	0					
16,400.00	7,520.00	16,444.64	7,520.00	66.18	66.30	89.83	1,980.12	1,847.86	132.25	14.972	0					
16,500.00	7,520.00	16,544.64	7,520.00	66.86	66.99	89.83	1,980.11	1,846.48	133.63	14.817	0					
16,600.00	7,520.00	16,644.64	7,520.00	67.55	67.68	89.83	1,980.11	1,845.10	135.01	14.666	0					
16,700.00	7,520.00	16,744.64	7,520.00	68.24	68.37	89.83	1,980.11	1,843.72	136.39	14.518	0					
16,800.00	7,520.00	16,844.64	7,520.00	68.93	69.06	89.83	1,980.11	1,842.34	137.78	14.372	0					
16,900.00	7,520.00	16,944.64	7,520.00	69.62	69.75	89.83	1,980.11	1,840.96	139.16	14.229	0					
17,000.00	7,520.00	17,044.64	7,520.00	70.31	70.44	89.83	1,980.11	1,839.57	140.54	14.089	0					
17,100.00	7,520.00	17,144.64	7,520.00	71.00	71.13	89.83	1,980.11	1,838.19	141.92	13.952	0					
17,200.00	7,520.00	17,244.64	7,520.00	71.69	71.82	89.83	1,980.11	1,836.81	143.30	13.817	0					
17,300.00	7,520.00	17,344.64	7,520.00	72.39	72.51	89.83	1,980.11	1,835.42	144.69	13.685	0					
17,400.00	7,520.00	17,444.64	7,520.00	73.08	73.20	89.83	1,980.11	1,834.04	146.07	13.556	0					
17,500.00	7,520.00	17,544.64	7,520.00	73.77	73.89	89.83	1,980.11	1,832.65	147.46	13.428	0					
17,582.23	7,520.00	17,632.75	7,520.00	74.34	74.50	89.83	1,980.01	1,831.38	148.64	13.321	0	SF				

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



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
0.00	0.00	0.00	0.00	0.00	0.00	0.13	27.69						0	
100.00	100.00	100.00	100.00	0.15	0.15	0.13	27.69	27.39	0.29	94.419	0			
200.00	200.00	200.00	200.00	0.32	0.32	0.13	27.69	27.04	0.64	43.104	0			
300.00	300.00	300.00	300.00	0.50	0.50	0.13	27.69	26.69	0.99	27.927	0			
400.00	400.00	400.00	400.00	0.67	0.67	0.13	27.69	26.34	1.34	20.654	0			
500.00	500.00	500.00	500.00	0.84	0.84	0.13	27.69	26.00	1.69	16.387	0			
600.00	600.00	600.00	600.00	1.02	1.02	0.13	27.69	25.65	2.04	13.581	0		CC, ES	
700.00	700.00	699.12	699.10	1.19	1.19	-1.51	29.21	26.82	2.39	12.239	0			
800.00	799.98	798.11	797.95	1.37	1.37	29.15	32.36	29.63	2.73	11.838	0			
900.00	899.84	896.98	896.45	1.54	1.54	27.39	35.64	32.56	3.08	11.571	0			
1,000.00	999.45	995.73	994.47	1.72	1.72	26.29	39.02	35.59	3.43	11.387	0			
1,100.00	1,098.70	1,094.37	1,091.92	1.90	1.90	25.70	42.46	38.69	3.77	11.254	0			
1,161.05	1,159.06	1,154.60	1,151.14	2.01	2.01	25.54	44.59	40.61	3.99	11.190	0			
1,200.00	1,197.51	1,193.53	1,189.36	2.08	2.09	25.53	45.89	41.77	4.13	11.126	0			
1,300.00	1,296.22	1,293.48	1,287.47	2.27	2.28	25.49	49.24	44.76	4.49	10.978	0			
1,400.00	1,394.92	1,393.42	1,385.58	2.45	2.47	25.46	52.59	47.74	4.85	10.850	0			
1,500.00	1,493.63	1,493.36	1,483.70	2.64	2.66	25.43	55.93	50.72	5.21	10.739	0			
1,600.00	1,592.34	1,593.31	1,581.81	2.83	2.86	25.40	59.28	53.71	5.57	10.641	0			
1,700.00	1,691.05	1,693.25	1,679.92	3.02	3.05	25.38	62.63	56.69	5.93	10.554	0			
1,800.00	1,789.76	1,793.20	1,778.03	3.21	3.25	25.36	65.97	59.67	6.30	10.476	0			
1,900.00	1,888.46	1,893.14	1,876.14	3.40	3.45	25.34	69.32	62.66	6.66	10.407	0			
2,000.00	1,987.17	1,993.08	1,974.25	3.59	3.64	25.33	72.66	65.64	7.02	10.344	0			
2,100.00	2,085.88	2,093.03	2,072.36	3.78	3.84	25.31	76.01	68.62	7.39	10.287	0			
2,200.00	2,184.59	2,192.97	2,170.48	3.97	4.04	25.30	79.36	71.60	7.75	10.235	0			
2,300.00	2,283.29	2,292.92	2,268.59	4.16	4.24	25.29	82.70	74.59	8.12	10.188	0			
2,400.00	2,382.00	2,392.86	2,366.70	4.35	4.43	25.27	86.05	77.57	8.48	10.145	0			
2,500.00	2,480.71	2,492.80	2,464.81	4.54	4.63	25.26	89.40	80.55	8.85	10.104	0			
2,600.00	2,579.42	2,592.75	2,562.92	4.74	4.83	25.25	92.74	83.53	9.21	10.067	0			
2,700.00	2,678.13	2,692.69	2,661.03	4.93	5.03	25.24	96.09	86.51	9.58	10.033	0			
2,800.00	2,776.83	2,792.64	2,759.14	5.12	5.23	25.24	99.43	89.49	9.94	10.001	0			
2,900.00	2,875.54	2,892.58	2,857.26	5.31	5.43	25.23	102.78	92.47	10.31	9.972	0			
3,000.00	2,974.25	2,992.52	2,955.37	5.50	5.63	25.22	106.13	95.45	10.67	9.944	0			
3,100.00	3,072.96	3,092.47	3,053.48	5.70	5.83	25.21	109.47	98.43	11.04	9.918	0			
3,200.00	3,171.66	3,192.41	3,151.59	5.89	6.03	25.21	112.82	101.42	11.40	9.894	0			
3,300.00	3,270.37	3,292.36	3,249.70	6.08	6.23	25.20	116.17	104.40	11.77	9.871	0			
3,400.00	3,369.08	3,392.30	3,347.81	6.27	6.43	25.19	119.51	107.38	12.13	9.849	0			
3,500.00	3,467.79	3,492.24	3,445.92	6.47	6.63	25.19	122.86	110.36	12.50	9.829	0			
3,600.00	3,566.50	3,592.19	3,544.04	6.66	6.83	25.18	126.20	113.34	12.87	9.810	0			
3,700.00	3,665.20	3,692.13	3,642.15	6.85	7.03	25.18	129.55	116.32	13.23	9.792	0			
3,800.00	3,763.91	3,792.08	3,740.26	7.05	7.23	25.17	132.90	119.30	13.60	9.774	0			
3,900.00	3,862.62	3,892.02	3,838.37	7.24	7.43	25.17	136.24	122.28	13.96	9.758	0			
4,000.00	3,961.33	3,991.96	3,936.48	7.43	7.63	25.16	139.59	125.26	14.33	9.743	0			
4,100.00	4,060.03	4,091.91	4,034.59	7.62	7.83	25.16	142.94	128.24	14.69	9.728	0			
4,200.00	4,158.74	4,191.85	4,132.71	7.82	8.03	25.16	146.28	131.22	15.06	9.714	0			
4,300.00	4,257.45	4,291.80	4,230.82	8.01	8.23	25.15	149.63	134.20	15.42	9.700	0			
4,400.00	4,356.16	4,391.74	4,328.93	8.20	8.43	25.15	152.97	137.18	15.79	9.688	0			
4,500.00	4,454.87	4,491.68	4,427.04	8.40	8.63	25.15	156.32	140.16	16.16	9.675	0			
4,600.00	4,553.57	4,591.63	4,525.15	8.59	8.83	25.14	159.67	143.14	16.52	9.664	0			
4,700.00	4,652.28	4,691.57	4,623.26	8.78	9.03	25.14	163.01	146.12	16.89	9.653	0			
4,800.00	4,750.99	4,791.52	4,721.37	8.98	9.23	25.14	166.36	149.10	17.25	9.642	0			
4,900.00	4,849.70	4,891.46	4,819.49	9.17	9.43	25.13	169.71	152.09	17.62	9.632	0			
5,000.00	4,948.40	4,991.40	4,917.60	9.36	9.63	25.13	173.05	155.07	17.99	9.622	0			
5,100.00	5,047.11	5,091.35	5,015.71	9.56	9.83	25.13	176.40	158.05	18.35	9.612	0			
5,200.00	5,145.82	5,191.29	5,113.82	9.75	10.03	25.12	179.74	161.03	18.72	9.603	0			

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



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 2 - Original Hole - Rev 0		Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder													Offset Well Error: 0.00 usft			
Reference		Offset		Semi Major Axis		Distance							Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision				
5,300.00	5,244.53	5,291.24	5,211.93	9.94	10.23	25.12	183.09	164.01	19.08	9.594	0					
5,400.00	5,343.24	5,391.18	5,310.04	10.14	10.43	25.12	186.44	166.99	19.45	9.586	0					
5,500.00	5,441.94	5,491.12	5,408.15	10.33	10.64	25.12	189.78	169.97	19.82	9.578	0					
5,600.00	5,540.65	5,591.07	5,506.27	10.52	10.84	25.11	193.13	172.95	20.18	9.570	0					
5,700.00	5,639.36	5,691.01	5,604.38	10.72	11.04	25.11	196.48	175.93	20.55	9.562	0					
5,800.00	5,738.07	5,790.96	5,702.49	10.91	11.24	25.11	199.82	178.91	20.91	9.555	0					
5,900.00	5,836.77	5,890.90	5,800.60	11.10	11.44	25.11	203.17	181.89	21.28	9.548	0					
6,000.00	5,935.48	5,990.84	5,898.71	11.30	11.64	25.11	206.51	184.87	21.65	9.541	0					
6,100.00	6,034.19	6,097.45	6,003.66	11.49	11.85	25.27	208.41	186.38	22.02	9.463	0					
6,200.00	6,132.90	6,204.66	6,109.84	11.68	12.04	25.83	206.83	184.42	22.41	9.231	0					
6,300.00	6,231.61	6,311.55	6,216.17	11.88	12.23	26.82	201.81	179.02	22.80	8.853	0					
6,393.93	6,324.32	6,411.40	6,315.79	12.06	12.40	28.23	194.06	170.89	23.17	8.376	0					
6,400.00	6,330.31	6,417.83	6,322.22	12.07	12.41	28.33	193.46	170.27	23.19	8.341	0					
6,500.00	6,429.31	6,523.49	6,427.84	12.26	12.58	30.08	183.61	160.02	23.59	7.784	0					
6,600.00	6,528.74	6,624.39	6,528.74	12.44	12.74	31.75	174.58	150.62	23.95	7.288	0					
6,700.00	6,628.48	6,723.91	6,628.09	12.61	12.89	34.45	168.56	144.23	24.33	6.928	0					
6,770.93	6,699.35	6,792.40	6,695.54	12.72	12.98	38.99	166.93	142.27	24.66	6.769	0					
6,800.00	6,728.41	6,819.61	6,721.92	12.77	13.02	41.40	167.27	142.46	24.81	6.741	0					
6,854.98	6,783.38	6,869.36	6,769.33	12.86	13.08	13.28	170.14	144.97	25.17	6.760	0					
6,900.00	6,828.40	6,908.20	6,805.45	12.93	13.13	17.88	174.91	149.74	25.18	6.947	0					
6,954.98	6,883.38	6,952.99	6,845.92	13.02	13.18	23.69	184.06	158.88	25.19	7.308	0					
7,000.00	6,928.37	6,988.08	6,876.62	13.09	13.22	-61.07	193.95	167.90	26.05	7.445	0					
7,050.00	6,978.05	7,026.27	6,908.93	13.17	13.26	-55.88	206.28	179.98	26.30	7.842	0					
7,100.00	7,027.15	7,063.74	6,939.37	13.24	13.31	-51.35	219.53	193.08	26.45	8.301	0					
7,150.00	7,075.37	7,100.00	6,967.57	13.30	13.35	-47.46	233.27	206.80	26.47	8.813	0					
7,200.00	7,122.40	7,136.83	6,994.83	13.37	13.39	-44.02	247.14	220.77	26.37	9.372	0					
7,250.00	7,167.96	7,172.60	7,019.89	13.43	13.43	-41.10	260.89	234.73	26.16	9.975	0					
7,300.00	7,211.76	7,207.92	7,043.19	13.49	13.47	-38.58	274.29	248.45	25.84	10.616	0					
7,350.00	7,253.54	7,242.85	7,064.76	13.55	13.52	-36.42	287.17	261.73	25.44	11.290	0					
7,400.00	7,293.04	7,277.44	7,084.59	13.61	13.56	-34.57	299.39	274.43	24.96	11.993	0					
7,450.00	7,330.01	7,311.72	7,102.71	13.67	13.61	-32.98	310.84	286.40	24.44	12.718	0					
7,500.00	7,364.22	7,350.00	7,121.05	13.73	13.66	-31.52	321.46	297.57	23.89	13.454	0					
7,550.00	7,395.48	7,379.54	7,133.80	13.79	13.71	-30.47	331.07	307.74	23.33	14.191	0					
7,600.00	7,423.57	7,413.13	7,146.79	13.86	13.76	-29.49	339.71	316.93	22.79	14.909	0					
7,650.00	7,448.34	7,450.00	7,159.14	13.93	13.82	-28.64	347.33	325.04	22.29	15.579	0					
7,700.00	7,469.62	7,479.83	7,167.65	14.01	13.87	-28.02	353.81	331.95	21.85	16.191	0					
7,750.00	7,487.29	7,512.99	7,175.52	14.09	13.93	-27.49	359.18	337.68	21.50	16.706	0					
7,800.00	7,501.23	7,550.00	7,182.31	14.18	14.00	-27.06	363.43	342.16	21.27	17.088	0					
7,850.00	7,511.36	7,579.07	7,186.16	14.28	14.06	-26.80	366.44	345.31	21.13	17.340	0					
7,900.00	7,517.63	7,612.02	7,188.92	14.38	14.14	-26.63	368.30	347.16	21.14	17.419	0					
7,954.98	7,520.00	7,649.03	7,190.00	14.51	14.22	-26.57	368.96	347.64	21.32	17.305	0					
7,970.40	7,520.00	7,663.24	7,190.00	14.55	14.26	-26.57	368.96	347.55	21.41	17.235	0					
8,000.00	7,520.00	7,692.85	7,190.00	14.63	14.33	-26.57	368.96	347.37	21.59	17.089	0					
8,100.00	7,520.00	7,792.85	7,190.00	14.90	14.60	-26.57	368.96	346.75	22.21	16.609	0					
8,200.00	7,520.00	7,892.85	7,190.00	15.22	14.91	-26.57	368.96	346.11	22.85	16.145	0					
8,300.00	7,520.00	7,992.85	7,190.00	15.56	15.24	-26.57	368.96	345.46	23.50	15.698	0					
8,400.00	7,520.00	8,092.85	7,190.00	15.92	15.61	-26.57	368.96	344.80	24.17	15.268	0					
8,500.00	7,520.00	8,192.85	7,190.00	16.31	15.99	-26.57	368.96	344.12	24.84	14.853	0					
8,600.00	7,520.00	8,292.85	7,190.00	16.72	16.40	-26.57	368.96	343.44	25.52	14.455	0					
8,700.00	7,520.00	8,392.85	7,190.00	17.15	16.83	-26.57	368.96	342.74	26.22	14.073	0					
8,800.00	7,520.00	8,492.85	7,190.00	17.59	17.28	-26.57	368.96	342.04	26.92	13.706	0					
8,900.00	7,520.00	8,592.85	7,190.00	18.05	17.74	-26.57	368.96	341.33	27.63	13.354	0					
9,000.00	7,520.00	8,692.85	7,190.00	18.53	18.22	-26.57	368.96	340.62	28.35	13.016	0					
9,100.00	7,520.00	8,792.85	7,190.00	19.02	18.72	-26.57	368.96	339.89	29.07	12.692	0					

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



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
9,200.00	7,520.00	8,892.85	7,190.00	19.53	19.22	-26.57	368.96	339.16	29.80	12.381	0		
9,300.00	7,520.00	8,992.85	7,190.00	20.04	19.74	-26.57	368.96	338.42	30.54	12.082	0		
9,400.00	7,520.00	9,092.85	7,190.00	20.57	20.27	-26.57	368.96	337.68	31.28	11.796	0		
9,500.00	7,520.00	9,192.85	7,190.00	21.11	20.81	-26.57	368.96	336.94	32.03	11.521	0		
9,600.00	7,520.00	9,292.85	7,190.00	21.65	21.36	-26.57	368.96	336.18	32.78	11.256	0		
9,700.00	7,520.00	9,392.85	7,190.00	22.21	21.92	-26.57	368.96	335.43	33.53	11.003	0		
9,800.00	7,520.00	9,492.85	7,190.00	22.77	22.49	-26.57	368.96	334.67	34.29	10.759	0		
9,900.00	7,520.00	9,592.85	7,190.00	23.34	23.06	-26.57	368.96	333.90	35.06	10.524	0		
10,000.00	7,520.00	9,692.85	7,190.00	23.92	23.64	-26.57	368.96	333.14	35.83	10.299	0		
10,100.00	7,520.00	9,792.85	7,190.00	24.51	24.23	-26.57	368.96	332.37	36.60	10.082	0		
10,200.00	7,520.00	9,892.85	7,190.00	25.10	24.82	-26.57	368.96	331.59	37.37	9.873	0		
10,300.00	7,520.00	9,992.85	7,190.00	25.69	25.42	-26.57	368.96	330.81	38.15	9.672	0		
10,400.00	7,520.00	10,092.85	7,190.00	26.29	26.03	-26.57	368.96	330.03	38.93	9.478	0		
10,500.00	7,520.00	10,192.85	7,190.00	26.90	26.64	-26.57	368.96	329.25	39.71	9.291	0		
10,600.00	7,520.00	10,292.85	7,190.00	27.51	27.25	-26.57	368.96	328.47	40.50	9.111	0		
10,700.00	7,520.00	10,392.85	7,190.00	28.13	27.87	-26.57	368.96	327.68	41.28	8.937	0		
10,800.00	7,520.00	10,492.85	7,190.00	28.75	28.49	-26.57	368.96	326.89	42.07	8.770	0		
10,900.00	7,520.00	10,592.85	7,190.00	29.37	29.11	-26.57	368.96	326.10	42.86	8.608	0		
11,000.00	7,520.00	10,692.85	7,190.00	30.00	29.74	-26.57	368.96	325.30	43.66	8.451	0		
11,100.00	7,520.00	10,792.85	7,190.00	30.63	30.38	-26.57	368.96	324.51	44.45	8.300	0		
11,200.00	7,520.00	10,892.85	7,190.00	31.26	31.01	-26.57	368.96	323.71	45.25	8.154	0		
11,300.00	7,520.00	10,992.85	7,190.00	31.90	31.65	-26.57	368.96	322.91	46.05	8.012	0		
11,400.00	7,520.00	11,092.85	7,190.00	32.54	32.29	-26.57	368.96	322.11	46.85	7.875	0		
11,500.00	7,520.00	11,192.85	7,190.00	33.18	32.93	-26.57	368.96	321.31	47.65	7.743	0		
11,600.00	7,520.00	11,292.85	7,190.00	33.82	33.58	-26.57	368.96	320.51	48.46	7.614	0		
11,700.00	7,520.00	11,392.85	7,190.00	34.47	34.23	-26.57	368.96	319.70	49.26	7.490	0		
11,800.00	7,520.00	11,492.85	7,190.00	35.12	34.88	-26.57	368.96	318.90	50.07	7.369	0		
11,900.00	7,520.00	11,592.85	7,190.00	35.77	35.53	-26.57	368.96	318.09	50.87	7.252	0		
12,000.00	7,520.00	11,692.85	7,190.00	36.42	36.18	-26.57	368.96	317.28	51.68	7.139	0		
12,100.00	7,520.00	11,792.85	7,190.00	37.07	36.84	-26.57	368.96	316.47	52.49	7.029	0		
12,200.00	7,520.00	11,892.85	7,190.00	37.73	37.50	-26.57	368.96	315.66	53.30	6.922	0		
12,300.00	7,520.00	11,992.85	7,190.00	38.39	38.16	-26.57	368.96	314.85	54.12	6.818	0		
12,400.00	7,520.00	12,092.85	7,190.00	39.05	38.82	-26.57	368.96	314.03	54.93	6.717	0		
12,500.00	7,520.00	12,192.85	7,190.00	39.71	39.48	-26.57	368.96	313.22	55.74	6.619	0		
12,600.00	7,520.00	12,292.85	7,190.00	40.37	40.14	-26.57	368.96	312.41	56.56	6.524	0		
12,700.00	7,520.00	12,392.85	7,190.00	41.04	40.81	-26.57	368.96	311.59	57.37	6.431	0		
12,800.00	7,520.00	12,492.85	7,190.00	41.70	41.48	-26.57	368.96	310.77	58.19	6.341	0		
12,900.00	7,520.00	12,592.85	7,190.00	42.37	42.14	-26.57	368.96	309.96	59.01	6.253	0		
13,000.00	7,520.00	12,692.85	7,190.00	43.03	42.81	-26.57	368.96	309.14	59.82	6.168	0		
13,100.00	7,520.00	12,792.85	7,190.00	43.70	43.48	-26.57	368.96	308.32	60.64	6.084	0		
13,200.00	7,520.00	12,892.85	7,190.00	44.37	44.15	-26.57	368.96	307.50	61.46	6.003	0		
13,300.00	7,520.00	12,992.85	7,190.00	45.04	44.82	-26.57	368.96	306.68	62.28	5.924	0		
13,400.00	7,520.00	13,092.85	7,190.00	45.72	45.50	-26.57	368.96	305.86	63.10	5.847	0		
13,500.00	7,520.00	13,192.85	7,190.00	46.39	46.17	-26.57	368.96	305.04	63.92	5.772	0		
13,600.00	7,520.00	13,292.85	7,190.00	47.06	46.85	-26.57	368.96	304.22	64.74	5.699	0		
13,700.00	7,520.00	13,392.85	7,190.00	47.74	47.52	-26.57	368.96	303.40	65.57	5.627	0		
13,800.00	7,520.00	13,492.85	7,190.00	48.41	48.20	-26.57	368.96	302.57	66.39	5.558	0		
13,900.00	7,520.00	13,592.85	7,190.00	49.09	48.87	-26.57	368.96	301.75	67.21	5.489	0		
14,000.00	7,520.00	13,692.85	7,190.00	49.76	49.55	-26.57	368.96	300.93	68.04	5.423	0		
14,100.00	7,520.00	13,792.85	7,190.00	50.44	50.23	-26.57	368.96	300.10	68.86	5.358	0		
14,200.00	7,520.00	13,892.85	7,190.00	51.12	50.91	-26.57	368.96	299.28	69.69	5.295	0		
14,300.00	7,520.00	13,992.85	7,190.00	51.80	51.59	-26.57	368.96	298.45	70.51	5.233	0		
14,400.00	7,520.00	14,092.85	7,190.00	52.48	52.27	-26.57	368.96	297.62	71.34	5.172	0		
14,500.00	7,520.00	14,192.85	7,190.00	53.16	52.95	-26.57	368.96	296.80	72.16	5.113	0		

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



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
14,600.00	7,520.00	14,292.85	7,190.00	53.84	53.63	-26.57	368.96	295.97	72.99	5.055	0		
14,700.00	7,520.00	14,392.85	7,190.00	54.52	54.32	-26.57	368.96	295.14	73.82	4.998	0		
14,764.38	7,520.00	14,457.22	7,190.00	54.96	54.75	-26.57	368.96	294.61	74.35	4.963	0		
14,800.00	7,520.00	14,492.85	7,190.00	55.20	55.00	-26.57	368.96	294.32	74.65	4.943	0		
14,900.00	7,520.00	14,592.85	7,190.00	55.89	55.68	-26.57	368.96	293.49	75.47	4.889	0		
15,000.00	7,520.00	14,692.85	7,190.00	56.57	56.36	-26.57	368.96	292.66	76.30	4.836	0		
15,100.00	7,520.00	14,792.85	7,190.00	57.25	57.05	-26.57	368.96	291.83	77.13	4.784	0		
15,200.00	7,520.00	14,892.85	7,190.00	57.94	57.73	-26.57	368.96	291.00	77.96	4.733	0		
15,300.00	7,520.00	14,992.85	7,190.00	58.62	58.42	-26.57	368.96	290.17	78.79	4.683	0		
15,400.00	7,520.00	15,092.85	7,190.00	59.30	59.10	-26.57	368.96	289.34	79.62	4.634	0		
15,500.00	7,520.00	15,192.85	7,190.00	59.99	59.79	-26.57	368.96	288.52	80.45	4.586	0		
15,600.00	7,520.00	15,292.85	7,190.00	60.68	60.48	-26.57	368.96	287.68	81.28	4.540	0		
15,700.00	7,520.00	15,392.85	7,190.00	61.36	61.16	-26.57	368.96	286.85	82.11	4.494	0		
15,800.00	7,520.00	15,492.85	7,190.00	62.05	61.85	-26.57	368.96	286.02	82.94	4.449	0		
15,900.00	7,520.00	15,592.85	7,190.00	62.74	62.54	-26.57	368.96	285.19	83.77	4.404	0		
16,000.00	7,520.00	15,692.85	7,190.00	63.42	63.23	-26.57	368.96	284.36	84.60	4.361	0		
16,100.00	7,520.00	15,792.85	7,190.00	64.11	63.91	-26.57	368.96	283.53	85.43	4.319	0		
16,200.00	7,520.00	15,892.85	7,190.00	64.80	64.60	-26.57	368.96	282.70	86.26	4.277	0		
16,300.00	7,520.00	15,992.85	7,190.00	65.49	65.29	-26.57	368.96	281.87	87.10	4.236	0		
16,400.00	7,520.00	16,092.85	7,190.00	66.18	65.98	-26.57	368.96	281.03	87.93	4.196	0		
16,500.00	7,520.00	16,192.85	7,190.00	66.86	66.67	-26.57	368.96	280.20	88.76	4.157	0		
16,600.00	7,520.00	16,292.85	7,190.00	67.55	67.36	-26.57	368.96	279.37	89.59	4.118	0		
16,700.00	7,520.00	16,392.85	7,190.00	68.24	68.05	-26.57	368.96	278.54	90.43	4.080	0		
16,800.00	7,520.00	16,492.85	7,190.00	68.93	68.74	-26.57	368.96	277.70	91.26	4.043	0		
16,900.00	7,520.00	16,592.85	7,190.00	69.62	69.43	-26.57	368.96	276.87	92.09	4.006	0		
17,000.00	7,520.00	16,692.85	7,190.00	70.31	70.12	-26.57	368.96	276.04	92.93	3.970	0		
17,100.00	7,520.00	16,792.85	7,190.00	71.00	70.81	-26.57	368.96	275.20	93.76	3.935	0		
17,200.00	7,520.00	16,892.85	7,190.00	71.69	71.50	-26.57	368.96	274.37	94.59	3.900	0		
17,300.00	7,520.00	16,992.85	7,190.00	72.39	72.20	-26.57	368.96	273.53	95.43	3.866	0		
17,400.00	7,520.00	17,092.85	7,190.00	73.08	72.89	-26.57	368.96	272.70	96.26	3.833	0		
17,500.00	7,520.00	17,192.85	7,190.00	73.77	73.58	-26.57	368.96	271.87	97.10	3.800	0		
17,559.23	7,520.00	17,252.08	7,190.00	74.18	73.99	-26.57	368.96	271.37	97.59	3.781	0		
17,582.23	7,520.00	17,273.45	7,190.00	74.34	74.14	-26.57	368.97	271.19	97.78	3.774	0	SF	



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
0.00	0.00	0.00	0.00	0.00	0.00	-179.88	28.05							
100.00	100.00	100.00	100.00	0.15	0.15	-179.88	28.05	27.76	0.29	95.675	0			
200.00	200.00	200.00	200.00	0.32	0.32	-179.88	28.05	27.41	0.64	43.678	0			
300.00	300.00	300.00	300.00	0.50	0.50	-179.88	28.05	27.06	0.99	28.298	0			
400.00	400.00	400.00	400.00	0.67	0.67	-179.88	28.05	26.71	1.34	20.929	0			
500.00	500.00	500.00	500.00	0.84	0.84	-179.88	28.05	26.36	1.69	16.605	0			
600.00	600.00	600.00	600.00	1.02	1.02	-179.88	28.05	26.01	2.04	13.762	0			
700.00	700.00	700.00	700.00	1.19	1.19	-179.88	28.05	25.67	2.39	11.750	0			
800.00	799.98	799.98	799.98	1.37	1.37	-148.44	29.53	26.79	2.74	10.791	0		CC, ES	
900.00	899.84	900.81	900.79	1.54	1.54	-151.39	32.63	29.54	3.08	10.577	0			
1,000.00	999.45	1,001.76	1,001.59	1.72	1.72	-153.32	35.93	32.50	3.43	10.469	0			
1,100.00	1,098.70	1,102.83	1,102.27	1.90	1.90	-154.48	39.40	35.62	3.78	10.424	0			
1,161.05	1,159.06	1,164.59	1,163.61	2.01	2.01	-154.87	41.58	37.59	3.99	10.417	0			
1,200.00	1,197.51	1,204.02	1,202.69	2.08	2.08	-154.88	42.75	38.62	4.13	10.350	0			
1,300.00	1,296.22	1,304.44	1,301.96	2.27	2.26	-153.80	44.35	39.86	4.49	9.878	0			
1,400.00	1,394.92	1,404.42	1,400.78	2.45	2.45	-152.68	45.80	40.95	4.85	9.445	0			
1,500.00	1,493.63	1,504.41	1,499.61	2.64	2.63	-151.62	47.27	42.06	5.21	9.072	0			
1,600.00	1,592.34	1,604.40	1,598.43	2.83	2.82	-150.63	48.75	43.18	5.57	8.747	0			
1,700.00	1,691.05	1,704.38	1,697.25	3.02	3.00	-149.70	50.24	44.31	5.94	8.463	0			
1,800.00	1,789.76	1,804.37	1,796.08	3.21	3.19	-148.82	51.75	45.45	6.30	8.213	0			
1,900.00	1,888.46	1,904.35	1,894.90	3.40	3.38	-147.99	53.27	46.60	6.67	7.991	0			
2,000.00	1,987.17	2,004.34	1,993.72	3.59	3.57	-147.21	54.80	47.77	7.03	7.792	0			
2,100.00	2,085.88	2,104.32	2,092.54	3.78	3.76	-146.47	56.34	48.94	7.40	7.613	0			
2,200.00	2,184.59	2,204.31	2,191.37	3.97	3.94	-145.77	57.89	50.12	7.77	7.452	0			
2,300.00	2,283.29	2,304.29	2,290.19	4.16	4.13	-145.10	59.44	51.31	8.14	7.306	0			
2,400.00	2,382.00	2,404.28	2,389.01	4.35	4.32	-144.47	61.01	52.50	8.51	7.173	0			
2,500.00	2,480.71	2,504.27	2,487.84	4.54	4.51	-143.87	62.58	53.70	8.88	7.051	0			
2,600.00	2,579.42	2,604.25	2,586.66	4.74	4.70	-143.31	64.16	54.91	9.25	6.939	0			
2,700.00	2,678.13	2,704.24	2,685.48	4.93	4.89	-142.76	65.74	56.13	9.62	6.836	0			
2,800.00	2,776.83	2,804.22	2,784.30	5.12	5.08	-142.25	67.33	57.34	9.99	6.741	0			
2,900.00	2,875.54	2,904.21	2,883.13	5.31	5.27	-141.76	68.93	58.57	10.36	6.654	0			
3,000.00	2,974.25	3,004.19	2,981.95	5.50	5.46	-141.29	70.52	59.79	10.73	6.572	0			
3,100.00	3,072.96	3,104.18	3,080.77	5.70	5.65	-140.84	72.13	61.02	11.10	6.496	0			
3,200.00	3,171.66	3,204.16	3,179.60	5.89	5.84	-140.41	73.74	62.26	11.48	6.425	0			
3,300.00	3,270.37	3,304.15	3,278.42	6.08	6.03	-140.00	75.35	63.50	11.85	6.359	0			
3,400.00	3,369.08	3,404.14	3,377.24	6.27	6.22	-139.60	76.96	64.74	12.22	6.297	0			
3,500.00	3,467.79	3,504.12	3,476.07	6.47	6.42	-139.22	78.58	65.99	12.60	6.239	0			
3,600.00	3,566.50	3,604.11	3,574.89	6.66	6.61	-138.86	80.21	67.24	12.97	6.184	0			
3,700.00	3,665.20	3,704.09	3,673.71	6.85	6.80	-138.51	81.83	68.49	13.34	6.132	0			
3,800.00	3,763.91	3,804.08	3,772.53	7.05	6.99	-138.18	83.46	69.74	13.72	6.084	0			
3,900.00	3,862.62	3,904.06	3,871.36	7.24	7.18	-137.86	85.09	71.00	14.09	6.038	0			
4,000.00	3,961.33	4,004.05	3,970.18	7.43	7.37	-137.55	86.73	72.26	14.47	5.994	0			
4,100.00	4,060.03	4,104.04	4,069.00	7.62	7.56	-137.25	88.36	73.52	14.84	5.953	0			
4,200.00	4,158.74	4,204.02	4,167.83	7.82	7.75	-136.96	90.00	74.78	15.22	5.914	0			
4,300.00	4,257.45	4,304.01	4,266.65	8.01	7.94	-136.69	91.64	76.05	15.59	5.877	0			
4,400.00	4,356.16	4,403.99	4,365.47	8.20	8.13	-136.42	93.28	77.32	15.97	5.842	0			
4,500.00	4,454.87	4,503.98	4,464.29	8.40	8.33	-136.16	94.93	78.58	16.34	5.808	0			
4,600.00	4,553.57	4,603.96	4,563.12	8.59	8.52	-135.91	96.58	79.86	16.72	5.776	0			
4,700.00	4,652.28	4,703.95	4,661.94	8.78	8.71	-135.67	98.22	81.13	17.10	5.746	0			
4,800.00	4,750.99	4,803.93	4,760.76	8.98	8.90	-135.44	99.87	82.40	17.47	5.716	0			
4,900.00	4,849.70	4,903.92	4,859.59	9.17	9.09	-135.21	101.53	83.68	17.85	5.688	0			
5,000.00	4,948.40	5,003.91	4,958.41	9.36	9.28	-134.99	103.18	84.95	18.22	5.662	0			
5,100.00	5,047.11	5,103.89	5,057.23	9.56	9.47	-134.78	104.83	86.23	18.60	5.636	0			
5,200.00	5,145.82	5,203.88	5,156.05	9.75	9.67	-134.58	106.49	87.51	18.98	5.612	0			

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



Schlumberger

Anticollision Risk Report



Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance								Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
5,300.00	5,244.53	5,303.86	5,254.88	9.94	9.86	-134.38	108.15	88.79	19.35	5.588	0			
5,400.00	5,343.24	5,403.85	5,353.70	10.14	10.05	-134.19	109.81	90.08	19.73	5.565	0			
5,500.00	5,441.94	5,503.83	5,452.52	10.33	10.24	-134.00	111.47	91.36	20.11	5.544	0			
5,600.00	5,540.65	5,603.82	5,551.35	10.52	10.43	-133.82	113.13	92.64	20.48	5.523	0			
5,700.00	5,639.36	5,703.80	5,650.17	10.72	10.62	-133.64	114.79	93.93	20.86	5.503	0			
5,800.00	5,738.07	5,803.79	5,748.99	10.91	10.81	-133.47	116.45	95.21	21.24	5.483	0			
5,900.00	5,836.77	5,903.78	5,847.81	11.10	11.01	-133.31	118.12	96.50	21.61	5.465	0			
6,000.00	5,935.48	6,003.76	5,946.64	11.30	11.20	-133.14	119.78	97.79	21.99	5.447	0			
6,100.00	6,034.19	6,103.04	6,044.78	11.49	11.39	-133.04	121.53	99.16	22.37	5.434	0			
6,200.00	6,132.90	6,200.00	6,140.96	11.68	11.56	-133.82	124.83	102.12	22.71	5.496	0			
6,300.00	6,231.61	6,297.41	6,237.96	11.88	11.74	-135.70	130.32	107.29	23.03	5.659	0			
6,393.93	6,324.32	6,388.03	6,328.42	12.06	11.89	-138.24	137.67	114.37	23.30	5.908	0			
6,400.00	6,330.31	6,393.87	6,334.25	12.07	11.90	-138.43	138.22	114.90	23.32	5.927	0			
6,500.00	6,429.31	6,489.83	6,430.17	12.26	12.06	-141.37	147.30	123.70	23.60	6.241	0			
6,600.00	6,528.74	6,588.40	6,528.74	12.44	12.22	-143.86	155.69	131.81	23.88	6.518	0			
6,700.00	6,628.48	6,688.20	6,628.37	12.61	12.38	-146.99	161.49	137.36	24.13	6.693	0			
6,800.00	6,728.41	6,784.23	6,722.52	12.77	12.51	-154.09	166.04	141.78	24.26	6.844	0			
6,854.98	6,783.38	6,834.14	6,770.06	12.86	12.57	167.43	169.57	144.31	25.26	6.714	0			
6,900.00	6,828.40	6,873.09	6,806.26	12.93	12.62	162.77	174.16	148.70	25.45	6.843	0			
6,954.98	6,883.38	6,917.99	6,846.80	13.02	12.68	156.88	183.09	157.40	25.69	7.128	0			
7,000.00	6,928.37	6,950.00	6,874.83	13.09	12.72	61.96	192.86	168.38	24.49	7.876	0			
7,050.00	6,978.05	6,991.42	6,909.87	13.17	12.76	56.33	205.05	180.57	24.49	8.374	0			
7,100.00	7,027.15	7,028.95	6,940.33	13.24	12.81	51.74	218.24	193.81	24.43	8.933	0			
7,150.00	7,075.37	7,065.83	6,968.95	13.30	12.85	47.76	231.94	207.64	24.30	9.543	0			
7,200.00	7,122.40	7,100.00	6,994.23	13.37	12.89	44.45	245.83	221.73	24.10	10.201	0			
7,250.00	7,167.96	7,137.96	7,020.81	13.43	12.94	41.35	259.59	235.77	23.82	10.898	0			
7,300.00	7,211.76	7,173.32	7,044.08	13.49	12.98	38.80	273.03	249.57	23.46	11.637	0			
7,350.00	7,253.54	7,208.29	7,065.61	13.55	13.03	36.61	285.97	262.93	23.04	12.413	0			
7,400.00	7,293.04	7,242.90	7,085.40	13.61	13.07	34.72	298.25	275.70	22.56	13.222	0			
7,450.00	7,330.01	7,277.22	7,103.46	13.67	13.12	33.11	309.78	287.75	22.04	14.058	0			
7,500.00	7,364.22	7,311.26	7,119.80	13.73	13.17	31.73	320.45	298.96	21.49	14.913	0			
7,550.00	7,395.48	7,350.00	7,136.43	13.79	13.23	30.47	330.24	309.30	20.94	15.772	0			
7,600.00	7,423.57	7,378.68	7,147.35	13.86	13.27	29.57	338.93	318.53	20.40	16.614	0			
7,650.00	7,448.34	7,412.11	7,158.56	13.93	13.33	28.75	346.62	326.73	19.89	17.425	0			
7,700.00	7,469.62	7,450.00	7,169.24	14.01	13.40	28.02	353.27	333.82	19.46	18.157	0			
7,750.00	7,487.29	7,478.58	7,175.85	14.09	13.45	27.53	358.71	339.62	19.09	18.792	0			
7,800.00	7,501.23	7,511.66	7,181.94	14.18	13.52	27.11	363.04	344.21	18.83	19.282	0			
7,850.00	7,511.36	7,550.00	7,186.88	14.28	13.61	26.79	366.25	347.56	18.69	19.594	0			
7,900.00	7,517.63	7,577.63	7,189.02	14.38	13.67	26.64	368.16	349.50	18.66	19.726	0			
7,954.98	7,520.00	7,614.26	7,190.00	14.51	13.77	26.56	368.95	350.14	18.80	19.622	0			
8,000.00	7,520.00	7,659.28	7,190.00	14.63	13.89	26.56	368.95	349.87	19.07	19.343	0			
8,100.00	7,520.00	7,759.28	7,190.00	14.90	14.18	26.56	368.95	349.26	19.69	18.739	0			
8,200.00	7,520.00	7,859.28	7,190.00	15.22	14.50	26.56	368.95	348.63	20.32	18.157	0			
8,300.00	7,520.00	7,959.28	7,190.00	15.56	14.86	26.56	368.95	347.98	20.97	17.597	0			
8,400.00	7,520.00	8,059.28	7,190.00	15.92	15.23	26.56	368.95	347.32	21.63	17.060	0			
8,500.00	7,520.00	8,159.28	7,190.00	16.31	15.63	26.56	368.95	346.65	22.30	16.546	0			
8,600.00	7,520.00	8,259.28	7,190.00	16.72	16.05	26.56	368.95	345.96	22.98	16.054	0			
8,700.00	7,520.00	8,359.28	7,190.00	17.15	16.49	26.56	368.95	345.27	23.68	15.583	0			
8,800.00	7,520.00	8,459.28	7,190.00	17.59	16.95	26.56	368.95	344.57	24.38	15.133	0			
8,900.00	7,520.00	8,559.28	7,190.00	18.05	17.42	26.56	368.95	343.85	25.09	14.704	0			
9,000.00	7,520.00	8,659.28	7,190.00	18.53	17.91	26.56	368.95	343.13	25.81	14.294	0			
9,100.00	7,520.00	8,759.28	7,190.00	19.02	18.41	26.56	368.95	342.41	26.54	13.902	0			
9,200.00	7,520.00	8,859.28	7,190.00	19.53	18.92	26.56	368.95	341.67	27.27	13.528	0			
9,300.00	7,520.00	8,959.28	7,190.00	20.04	19.45	26.56	368.95	340.93	28.01	13.170	0			

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



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder												Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
9,400.00	7,520.00	9,059.28	7,190.00	20.57	19.99	26.56	368.95	340.19	28.76	12.829	0		
9,500.00	7,520.00	9,159.28	7,190.00	21.11	20.53	26.56	368.95	339.43	29.51	12.502	0		
9,600.00	7,520.00	9,259.28	7,190.00	21.65	21.09	26.56	368.95	338.68	30.27	12.190	0		
9,700.00	7,520.00	9,359.28	7,190.00	22.21	21.65	26.56	368.95	337.92	31.03	11.891	0		
9,800.00	7,520.00	9,459.28	7,190.00	22.77	22.23	26.56	368.95	337.15	31.79	11.605	0		
9,900.00	7,520.00	9,559.28	7,190.00	23.34	22.81	26.56	368.94	336.38	32.56	11.330	0		
10,000.00	7,520.00	9,659.28	7,190.00	23.92	23.39	26.56	368.94	335.61	33.33	11.068	0		
10,100.00	7,520.00	9,759.28	7,190.00	24.51	23.99	26.56	368.94	334.83	34.11	10.816	0		
10,200.00	7,520.00	9,859.28	7,190.00	25.10	24.58	26.56	368.94	334.05	34.89	10.575	0		
10,300.00	7,520.00	9,959.28	7,190.00	25.69	25.19	26.56	368.94	333.27	35.67	10.343	0		
10,400.00	7,520.00	10,059.28	7,190.00	26.29	25.80	26.56	368.94	332.49	36.46	10.120	0		
10,500.00	7,520.00	10,159.28	7,190.00	26.90	26.41	26.56	368.94	331.70	37.24	9.906	0		
10,600.00	7,520.00	10,259.28	7,190.00	27.51	27.03	26.56	368.94	330.91	38.03	9.700	0		
10,700.00	7,520.00	10,359.28	7,190.00	28.13	27.65	26.56	368.94	330.12	38.83	9.502	0		
10,800.00	7,520.00	10,459.28	7,190.00	28.75	28.28	26.56	368.94	329.32	39.62	9.312	0		
10,900.00	7,520.00	10,559.28	7,190.00	29.37	28.91	26.56	368.94	328.53	40.42	9.128	0		
11,000.00	7,520.00	10,659.28	7,190.00	30.00	29.54	26.56	368.94	327.73	41.22	8.952	0		
11,100.00	7,520.00	10,759.28	7,190.00	30.63	30.18	26.56	368.94	326.93	42.02	8.781	0		
11,200.00	7,520.00	10,859.28	7,190.00	31.26	30.82	26.56	368.94	326.13	42.82	8.617	0		
11,300.00	7,520.00	10,959.28	7,190.00	31.90	31.46	26.56	368.94	325.32	43.62	8.458	0		
11,400.00	7,520.00	11,059.28	7,190.00	32.54	32.10	26.56	368.94	324.52	44.43	8.305	0		
11,500.00	7,520.00	11,159.28	7,190.00	33.18	32.75	26.56	368.94	323.71	45.23	8.157	0		
11,600.00	7,520.00	11,259.28	7,190.00	33.82	33.40	26.56	368.94	322.90	46.04	8.014	0		
11,700.00	7,520.00	11,359.28	7,190.00	34.47	34.05	26.56	368.94	322.09	46.85	7.875	0		
11,800.00	7,520.00	11,459.28	7,190.00	35.12	34.70	26.56	368.94	321.28	47.66	7.741	0		
11,900.00	7,520.00	11,559.28	7,190.00	35.77	35.36	26.56	368.94	320.47	48.47	7.612	0		
12,000.00	7,520.00	11,659.28	7,190.00	36.42	36.01	26.56	368.94	319.66	49.28	7.486	0		
12,100.00	7,520.00	11,759.28	7,190.00	37.07	36.67	26.56	368.94	318.85	50.10	7.365	0		
12,200.00	7,520.00	11,859.28	7,190.00	37.73	37.33	26.56	368.94	318.03	50.91	7.247	0		
12,300.00	7,520.00	11,959.28	7,190.00	38.39	37.99	26.56	368.94	317.22	51.73	7.133	0		
12,400.00	7,520.00	12,059.28	7,190.00	39.05	38.66	26.56	368.94	316.40	52.54	7.022	0		
12,500.00	7,520.00	12,159.28	7,190.00	39.71	39.32	26.56	368.94	315.58	53.36	6.914	0		
12,600.00	7,520.00	12,259.28	7,190.00	40.37	39.99	26.56	368.94	314.76	54.18	6.810	0		
12,700.00	7,520.00	12,359.28	7,190.00	41.04	40.66	26.56	368.94	313.94	55.00	6.708	0		
12,800.00	7,520.00	12,459.28	7,190.00	41.70	41.32	26.56	368.94	313.13	55.82	6.610	0		
12,900.00	7,520.00	12,559.28	7,190.00	42.37	41.99	26.56	368.94	312.30	56.64	6.514	0		
13,000.00	7,520.00	12,659.28	7,190.00	43.03	42.67	26.56	368.94	311.48	57.46	6.421	0		
13,100.00	7,520.00	12,759.28	7,190.00	43.70	43.34	26.56	368.94	310.66	58.28	6.331	0		
13,200.00	7,520.00	12,859.28	7,190.00	44.37	44.01	26.56	368.94	309.84	59.10	6.243	0		
13,300.00	7,520.00	12,959.28	7,190.00	45.04	44.68	26.56	368.94	309.02	59.92	6.157	0		
13,400.00	7,520.00	13,059.28	7,190.00	45.72	45.36	26.56	368.94	308.19	60.75	6.073	0		
13,500.00	7,520.00	13,159.28	7,190.00	46.39	46.03	26.56	368.94	307.37	61.57	5.992	0		
13,600.00	7,520.00	13,259.28	7,190.00	47.06	46.71	26.56	368.94	306.54	62.40	5.913	0		
13,700.00	7,520.00	13,359.28	7,190.00	47.74	47.39	26.56	368.94	305.72	63.22	5.836	0		
13,800.00	7,520.00	13,459.28	7,190.00	48.41	48.06	26.56	368.94	304.89	64.05	5.760	0		
13,900.00	7,520.00	13,559.28	7,190.00	49.09	48.74	26.56	368.94	304.07	64.87	5.687	0		
14,000.00	7,520.00	13,659.28	7,190.00	49.76	49.42	26.56	368.94	303.24	65.70	5.616	0		
14,100.00	7,520.00	13,759.28	7,190.00	50.44	50.10	26.56	368.94	302.41	66.53	5.546	0		
14,200.00	7,520.00	13,859.28	7,190.00	51.12	50.78	26.56	368.94	301.59	67.35	5.478	0		
14,300.00	7,520.00	13,959.28	7,190.00	51.80	51.46	26.56	368.94	300.76	68.18	5.411	0		
14,400.00	7,520.00	14,059.28	7,190.00	52.48	52.15	26.56	368.94	299.93	69.01	5.346	0		
14,500.00	7,520.00	14,159.28	7,190.00	53.16	52.83	26.56	368.94	299.10	69.84	5.283	0		
14,600.00	7,520.00	14,259.28	7,190.00	53.84	53.51	26.56	368.94	298.27	70.67	5.221	0		
14,700.00	7,520.00	14,359.28	7,190.00	54.52	54.20	26.56	368.94	297.44	71.50	5.160	0		

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



Schlumberger
Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 4 - Original Hole - Rev 0		Offset Site Error:		0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:		0.00 usft		
Reference		Offset		Semi Major Axis		Distance							Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision					
14,800.00	7,520.00	14,459.28	7,190.00	55.20	54.88	26.56	368.94	296.61	72.33	5.101	0						
14,900.00	7,520.00	14,559.28	7,190.00	55.89	55.56	26.56	368.94	295.78	73.16	5.043	0						
15,000.00	7,520.00	14,659.28	7,190.00	56.57	56.25	26.56	368.94	294.95	73.99	4.987	0						
15,100.00	7,520.00	14,759.28	7,190.00	57.25	56.93	26.56	368.94	294.12	74.82	4.931	0						
15,200.00	7,520.00	14,859.28	7,190.00	57.94	57.62	26.56	368.94	293.29	75.65	4.877	0						
15,300.00	7,520.00	14,959.28	7,190.00	58.62	58.31	26.56	368.94	292.46	76.48	4.824	0						
15,400.00	7,520.00	15,059.28	7,190.00	59.30	58.99	26.56	368.94	291.63	77.31	4.772	0						
15,500.00	7,520.00	15,159.28	7,190.00	59.99	59.68	26.56	368.94	290.79	78.14	4.721	0						
15,600.00	7,520.00	15,259.28	7,190.00	60.68	60.37	26.56	368.94	289.96	78.98	4.672	0						
15,700.00	7,520.00	15,359.28	7,190.00	61.36	61.06	26.56	368.94	289.13	79.81	4.623	0						
15,800.00	7,520.00	15,459.28	7,190.00	62.05	61.74	26.56	368.94	288.30	80.64	4.575	0						
15,900.00	7,520.00	15,559.28	7,190.00	62.74	62.43	26.56	368.94	287.46	81.47	4.528	0						
16,000.00	7,520.00	15,659.28	7,190.00	63.42	63.12	26.56	368.94	286.63	82.31	4.483	0						
16,100.00	7,520.00	15,759.28	7,190.00	64.11	63.81	26.56	368.94	285.80	83.14	4.438	0						
16,200.00	7,520.00	15,859.28	7,190.00	64.80	64.50	26.56	368.94	284.96	83.97	4.394	0						
16,300.00	7,520.00	15,959.28	7,190.00	65.49	65.19	26.56	368.94	284.13	84.81	4.350	0						
16,400.00	7,520.00	16,059.28	7,190.00	66.18	65.88	26.56	368.94	283.30	85.64	4.308	0						
16,500.00	7,520.00	16,159.28	7,190.00	66.86	66.57	26.56	368.94	282.46	86.47	4.266	0						
16,600.00	7,520.00	16,259.28	7,190.00	67.55	67.26	26.56	368.94	281.63	87.31	4.226	0						
16,700.00	7,520.00	16,359.28	7,190.00	68.24	67.95	26.56	368.94	280.79	88.14	4.186	0						
16,800.00	7,520.00	16,459.28	7,190.00	68.93	68.64	26.56	368.94	279.96	88.98	4.146	0						
16,900.00	7,520.00	16,559.28	7,190.00	69.62	69.33	26.56	368.94	279.12	89.81	4.108	0						
17,000.00	7,520.00	16,659.28	7,190.00	70.31	70.03	26.56	368.94	278.29	90.65	4.070	0						
17,100.00	7,520.00	16,759.28	7,190.00	71.00	70.72	26.56	368.94	277.45	91.48	4.033	0						
17,200.00	7,520.00	16,859.28	7,190.00	71.69	71.41	26.56	368.94	276.62	92.32	3.996	0						
17,300.00	7,520.00	16,959.28	7,190.00	72.39	72.10	26.56	368.94	275.78	93.15	3.961	0						
17,400.00	7,520.00	17,059.28	7,190.00	73.08	72.79	26.56	368.93	274.95	93.99	3.925	0						
17,500.00	7,520.00	17,159.28	7,190.00	73.77	73.49	26.56	368.93	274.11	94.82	3.891	0						
17,505.23	7,520.00	17,164.51	7,190.00	73.80	73.52	26.56	368.93	273.93	95.01	3.883	0						
17,582.23	7,520.00	17,241.25	7,190.00	74.34	74.05	26.57	368.96	273.44	95.52	3.863	0	SF					



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 5 - Original Hole - Rev 0		Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder														Offset Well Error: 0.00 usft		
Reference		Offset		Semi Major Axis		Distance							Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision				
0.00	0.00	1.00	1.00	0.00	0.00	179.84	56.10					0	CC, ES			
100.00	100.00	101.00	101.00	0.15	0.15	179.84	56.10	55.81	0.29	190.198	0	0				
200.00	200.00	201.00	201.00	0.32	0.32	179.84	56.10	55.46	0.64	87.110	0	0				
300.00	300.00	301.00	301.00	0.50	0.50	179.84	56.10	55.11	0.99	56.491	0	0				
400.00	400.00	401.00	401.00	0.67	0.67	179.84	56.10	54.76	1.34	41.799	0	0				
500.00	500.00	501.00	501.00	0.84	0.85	179.84	56.10	54.41	1.69	33.172	0	0				
600.00	600.00	601.00	601.00	1.02	1.02	179.84	56.10	54.06	2.04	27.497	0	0				
700.00	700.00	701.00	701.00	1.19	1.20	179.84	56.10	53.71	2.39	23.480	0	0				
800.00	799.98	800.98	800.98	1.37	1.37	-147.80	57.57	54.83	2.74	21.028	0	0				
900.00	899.84	900.85	900.85	1.54	1.54	-150.33	62.06	58.98	3.08	20.118	0	0				
1,000.00	999.45	1,002.00	1,001.98	1.72	1.72	-152.70	68.64	65.21	3.43	19.996	0	0				
1,100.00	1,098.70	1,103.33	1,103.16	1.90	1.90	-153.74	76.17	72.39	3.78	20.154	0	0				
1,161.05	1,159.06	1,165.26	1,164.89	2.01	2.01	-153.85	81.20	77.21	3.99	20.347	0	0				
1,200.00	1,197.51	1,204.82	1,204.25	2.08	2.08	-153.70	84.34	80.21	4.13	20.421	0	0				
1,300.00	1,296.22	1,304.98	1,303.76	2.27	2.26	-152.70	91.52	87.04	4.49	20.400	0	0				
1,400.00	1,394.92	1,404.71	1,402.85	2.45	2.43	-151.81	98.68	93.83	4.84	20.373	0	0				
1,500.00	1,493.63	1,504.45	1,501.93	2.64	2.61	-151.04	105.85	100.65	5.20	20.348	0	0				
1,600.00	1,592.34	1,604.18	1,601.01	2.83	2.79	-150.36	113.04	107.48	5.56	20.324	0	0				
1,700.00	1,691.05	1,703.91	1,700.09	3.02	2.97	-149.77	120.25	114.33	5.92	20.304	0	0				
1,800.00	1,789.76	1,803.64	1,799.18	3.21	3.16	-149.24	127.47	121.18	6.28	20.285	0	0				
1,900.00	1,888.46	1,903.38	1,898.26	3.40	3.34	-148.77	134.69	128.05	6.65	20.267	0	0				
2,000.00	1,987.17	2,003.11	1,997.34	3.59	3.52	-148.35	141.93	134.92	7.01	20.252	0	0				
2,100.00	2,085.88	2,102.84	2,096.42	3.78	3.70	-147.97	149.17	141.80	7.37	20.237	0	0				
2,200.00	2,184.59	2,202.58	2,195.51	3.97	3.88	-147.63	156.42	148.68	7.73	20.224	0	0				
2,300.00	2,283.29	2,302.31	2,294.59	4.16	4.06	-147.31	163.67	155.57	8.10	20.211	0	0				
2,400.00	2,382.00	2,402.04	2,393.67	4.35	4.25	-147.02	170.93	162.47	8.46	20.200	0	0				
2,500.00	2,480.71	2,501.77	2,492.75	4.54	4.43	-146.76	178.19	169.36	8.83	20.189	0	0				
2,600.00	2,579.42	2,601.51	2,591.84	4.74	4.61	-146.51	185.45	176.26	9.19	20.179	0	0				
2,700.00	2,678.13	2,701.24	2,690.92	4.93	4.79	-146.29	192.72	183.17	9.56	20.169	0	0				
2,800.00	2,776.83	2,800.97	2,790.00	5.12	4.98	-146.08	199.99	190.07	9.92	20.160	0	0				
2,900.00	2,875.54	2,900.71	2,889.08	5.31	5.16	-145.89	207.27	196.98	10.29	20.152	0	0				
3,000.00	2,974.25	3,000.44	2,988.17	5.50	5.34	-145.70	214.54	203.89	10.65	20.144	0	0				
3,100.00	3,072.96	3,100.17	3,087.25	5.70	5.53	-145.54	221.82	210.80	11.02	20.136	0	0				
3,200.00	3,171.66	3,199.90	3,186.33	5.89	5.71	-145.38	229.10	217.72	11.38	20.129	0	0				
3,300.00	3,270.37	3,299.64	3,285.41	6.08	5.89	-145.23	236.38	224.63	11.75	20.123	0	0				
3,400.00	3,369.08	3,399.37	3,384.50	6.27	6.08	-145.09	243.66	231.55	12.11	20.116	0	0				
3,500.00	3,467.79	3,499.10	3,483.58	6.47	6.26	-144.96	250.94	238.46	12.48	20.110	0	0				
3,600.00	3,566.50	3,598.84	3,582.66	6.66	6.44	-144.83	258.23	245.38	12.84	20.104	0	0				
3,700.00	3,665.20	3,698.57	3,681.74	6.85	6.62	-144.71	265.51	252.30	13.21	20.099	0	0				
3,800.00	3,763.91	3,798.30	3,780.83	7.05	6.81	-144.60	272.80	259.22	13.58	20.094	0	0				
3,900.00	3,862.62	3,898.03	3,879.91	7.24	6.99	-144.50	280.09	266.15	13.94	20.089	0	0				
4,000.00	3,961.33	3,997.77	3,978.99	7.43	7.18	-144.40	287.38	273.07	14.31	20.084	0	0				
4,100.00	4,060.03	4,097.50	4,078.07	7.62	7.36	-144.30	294.67	279.99	14.68	20.079	0	0				
4,200.00	4,158.74	4,197.23	4,177.16	7.82	7.54	-144.21	301.96	286.92	15.04	20.075	0	0				
4,300.00	4,257.45	4,296.96	4,276.24	8.01	7.73	-144.13	309.25	293.84	15.41	20.071	0	0				
4,400.00	4,356.16	4,396.70	4,375.32	8.20	7.91	-144.04	316.54	300.77	15.77	20.067	0	0				
4,500.00	4,454.87	4,496.43	4,474.41	8.40	8.09	-143.96	323.83	307.69	16.14	20.063	0	0				
4,600.00	4,553.57	4,596.16	4,573.49	8.59	8.28	-143.89	331.12	314.62	16.51	20.059	0	0				
4,700.00	4,652.28	4,695.90	4,672.57	8.78	8.46	-143.82	338.42	321.54	16.87	20.056	0	0				
4,800.00	4,750.99	4,795.63	4,771.65	8.98	8.64	-143.75	345.71	328.47	17.24	20.052	0	0				
4,900.00	4,849.70	4,895.36	4,870.74	9.17	8.83	-143.68	353.01	335.40	17.61	20.049	0	0				
5,000.00	4,948.40	4,995.09	4,969.82	9.36	9.01	-143.62	360.30	342.33	17.97	20.046	0	0				
5,100.00	5,047.11	5,094.83	5,068.90	9.56	9.19	-143.56	367.60	349.26	18.34	20.043	0	0				
5,200.00	5,145.82	5,194.56	5,167.98	9.75	9.38	-143.50	374.89	356.19	18.71	20.040	0	0				

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



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance								Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
5,300.00	5,244.53	5,294.29	5,267.07	9.94	9.56	-143.44	382.19	363.11	19.07	20.037	0			
5,400.00	5,343.24	5,394.03	5,366.15	10.14	9.75	-143.39	389.49	370.04	19.44	20.034	0			
5,500.00	5,441.94	5,493.76	5,465.23	10.33	9.93	-143.34	396.78	376.97	19.81	20.031	0			
5,600.00	5,540.65	5,593.49	5,564.31	10.52	10.11	-143.29	404.08	383.90	20.18	20.029	0			
5,700.00	5,639.36	5,693.22	5,663.40	10.72	10.30	-143.24	411.38	390.84	20.54	20.026	0			
5,800.00	5,738.07	5,792.96	5,762.48	10.91	10.48	-143.19	418.67	397.77	20.91	20.024	0			
5,900.00	5,836.77	5,892.69	5,861.56	11.10	10.66	-143.15	425.97	404.70	21.28	20.021	0			
6,000.00	5,935.48	5,992.42	5,960.64	11.30	10.85	-143.10	433.27	411.63	21.64	20.019	0			
6,100.00	6,034.19	6,092.15	6,059.73	11.49	11.03	-143.06	440.57	418.56	22.01	20.017	0			
6,200.00	6,132.90	6,189.60	6,156.56	11.68	11.21	-143.04	447.95	425.58	22.37	20.023	0			
6,300.00	6,231.61	6,282.06	6,248.66	11.88	11.38	-143.27	456.55	433.83	22.72	20.098	0			
6,393.93	6,324.32	6,368.50	6,334.96	12.06	11.52	-143.77	466.08	443.05	23.03	20.238	0			
6,400.00	6,330.31	6,374.07	6,340.52	12.07	11.53	-143.82	466.74	443.69	23.05	20.248	0			
6,500.00	6,429.31	6,465.70	6,432.12	12.26	11.69	-144.64	477.03	453.64	23.39	20.395	0			
6,600.00	6,528.74	6,563.32	6,529.74	12.44	11.85	-145.44	485.71	461.99	23.72	20.475	0			
6,700.00	6,628.48	6,663.41	6,629.64	12.61	12.01	-146.51	491.59	467.56	24.03	20.459	0			
6,800.00	6,728.41	6,759.72	6,724.02	12.77	12.15	-148.94	495.06	470.78	24.27	20.396	0			
6,854.98	6,783.38	6,809.73	6,771.63	12.86	12.22	175.96	496.48	471.76	24.72	20.082	0			
6,900.00	6,828.40	6,850.00	6,809.00	12.93	12.27	174.24	498.02	473.13	24.89	20.009	0			
6,954.98	6,883.38	6,893.70	6,848.39	13.02	12.32	172.09	501.15	476.06	25.08	19.979	0			
7,000.00	6,928.37	6,928.89	6,879.11	13.09	12.37	79.95	504.74	480.07	24.67	20.460	0			
7,050.00	6,978.05	6,967.18	6,911.40	13.17	12.41	77.65	509.50	484.76	24.73	20.599	0			
7,100.00	7,027.15	7,004.73	6,941.80	13.24	12.46	75.42	514.92	490.14	24.78	20.780	0			
7,150.00	7,075.37	7,041.63	6,970.37	13.30	12.50	73.30	520.87	496.06	24.81	20.998	0			
7,200.00	7,122.40	7,077.95	6,997.12	13.37	12.55	71.28	527.20	502.39	24.81	21.250	0			
7,250.00	7,167.96	7,113.76	7,022.08	13.43	12.59	69.37	533.77	508.99	24.79	21.536	0			
7,300.00	7,211.76	7,150.00	7,045.84	13.49	12.64	67.55	540.46	515.73	24.73	21.851	0			
7,350.00	7,253.54	7,184.08	7,066.72	13.55	12.68	65.92	547.15	522.49	24.66	22.190	0			
7,400.00	7,293.04	7,218.68	7,086.42	13.61	12.73	64.38	553.72	529.16	24.56	22.549	0			
7,450.00	7,330.01	7,250.00	7,102.89	13.67	12.77	63.06	560.07	535.64	24.43	22.921	0			
7,500.00	7,364.22	7,287.01	7,120.64	13.73	12.83	61.72	566.09	541.79	24.30	23.293	0			
7,550.00	7,395.48	7,320.81	7,135.17	13.79	12.88	60.58	571.73	547.56	24.17	23.658	0			
7,600.00	7,423.57	7,350.00	7,146.41	13.86	12.93	59.65	576.91	552.88	24.03	24.008	0			
7,650.00	7,448.34	7,387.81	7,159.10	13.93	12.99	58.72	581.52	557.60	23.91	24.318	0			
7,700.00	7,469.62	7,421.08	7,168.51	14.01	13.06	57.98	585.55	561.73	23.82	24.580	0			
7,750.00	7,487.29	7,450.00	7,175.32	14.09	13.12	57.41	588.97	565.21	23.76	24.788	0			
7,800.00	7,501.23	7,487.28	7,182.21	14.18	13.21	56.90	591.67	567.92	23.75	24.908	0			
7,850.00	7,511.36	7,520.26	7,186.51	14.28	13.29	56.55	593.69	569.90	23.79	24.952	0			
7,900.00	7,517.63	7,550.00	7,188.93	14.38	13.37	56.34	595.00	571.11	23.88	24.913	0			
7,954.98	7,520.00	7,590.61	7,190.00	14.51	13.48	56.23	595.55	571.47	24.07	24.741	0			
8,000.00	7,520.00	7,635.64	7,190.00	14.63	13.61	56.23	595.54	571.22	24.32	24.485	0			
8,100.00	7,520.00	7,735.64	7,190.00	14.90	13.91	56.23	595.54	570.63	24.91	23.907	0			
8,200.00	7,520.00	7,835.64	7,190.00	15.22	14.25	56.23	595.54	570.00	25.54	23.315	0			
8,300.00	7,520.00	7,935.64	7,190.00	15.56	14.60	56.23	595.54	569.33	26.22	22.716	0			
8,400.00	7,520.00	8,035.64	7,190.00	15.92	14.98	56.23	595.54	568.61	26.93	22.115	0			
8,500.00	7,520.00	8,135.64	7,190.00	16.31	15.39	56.23	595.54	567.87	27.68	21.517	0			
8,600.00	7,520.00	8,235.64	7,190.00	16.72	15.81	56.23	595.54	567.08	28.46	20.926	0			
8,700.00	7,520.00	8,335.64	7,190.00	17.15	16.26	56.23	595.54	566.27	29.27	20.346	0			
8,800.00	7,520.00	8,435.64	7,190.00	17.59	16.72	56.23	595.54	565.43	30.11	19.780	0			
8,900.00	7,520.00	8,535.64	7,190.00	18.05	17.20	56.23	595.54	564.57	30.97	19.228	0			
9,000.00	7,520.00	8,635.64	7,190.00	18.53	17.69	56.23	595.54	563.68	31.86	18.692	0			
9,100.00	7,520.00	8,735.64	7,190.00	19.02	18.20	56.23	595.54	562.77	32.77	18.174	0			
9,200.00	7,520.00	8,835.64	7,190.00	19.53	18.71	56.23	595.54	561.84	33.70	17.673	0			
9,300.00	7,520.00	8,935.64	7,190.00	20.04	19.25	56.23	595.54	560.90	34.65	17.190	0			

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



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
9,400.00	7,520.00	9,035.64	7,190.00	20.57	19.79	56.23	595.54	559.93	35.61	16.725	0		
9,500.00	7,520.00	9,135.64	7,190.00	21.11	20.34	56.23	595.54	558.95	36.59	16.277	0		
9,600.00	7,520.00	9,235.64	7,190.00	21.65	20.90	56.23	595.54	557.96	37.58	15.847	0		
9,700.00	7,520.00	9,335.64	7,190.00	22.21	21.47	56.23	595.54	556.95	38.59	15.434	0		
9,800.00	7,520.00	9,435.64	7,190.00	22.77	22.04	56.23	595.54	555.94	39.61	15.037	0		
9,900.00	7,520.00	9,535.64	7,190.00	23.34	22.63	56.23	595.54	554.91	40.63	14.656	0		
10,000.00	7,520.00	9,635.64	7,190.00	23.92	23.22	56.23	595.54	553.87	41.67	14.290	0		
10,100.00	7,520.00	9,735.64	7,190.00	24.51	23.82	56.23	595.54	552.82	42.72	13.939	0		
10,200.00	7,520.00	9,835.64	7,190.00	25.10	24.42	56.23	595.54	551.76	43.78	13.602	0		
10,300.00	7,520.00	9,935.64	7,190.00	25.69	25.03	56.23	595.54	550.69	44.85	13.279	0		
10,400.00	7,520.00	10,035.64	7,190.00	26.29	25.64	56.23	595.54	549.62	45.92	12.968	0		
10,500.00	7,520.00	10,135.64	7,190.00	26.90	26.26	56.23	595.54	548.53	47.00	12.670	0		
10,600.00	7,520.00	10,235.64	7,190.00	27.51	26.88	56.23	595.54	547.45	48.09	12.383	0		
10,700.00	7,520.00	10,335.64	7,190.00	28.13	27.50	56.23	595.54	546.35	49.19	12.108	0		
10,800.00	7,520.00	10,435.64	7,190.00	28.75	28.13	56.23	595.54	545.25	50.29	11.843	0		
10,900.00	7,520.00	10,535.64	7,190.00	29.37	28.76	56.23	595.54	544.15	51.39	11.588	0		
11,000.00	7,520.00	10,635.64	7,190.00	30.00	29.40	56.23	595.54	543.03	52.50	11.343	0		
11,100.00	7,520.00	10,735.64	7,190.00	30.63	30.04	56.23	595.54	541.92	53.62	11.107	0		
11,200.00	7,520.00	10,835.64	7,190.00	31.26	30.68	56.23	595.54	540.80	54.74	10.880	0		
11,300.00	7,520.00	10,935.64	7,190.00	31.90	31.32	56.23	595.54	539.67	55.86	10.661	0		
11,400.00	7,520.00	11,035.64	7,190.00	32.54	31.97	56.23	595.54	538.55	56.99	10.450	0		
11,500.00	7,520.00	11,135.64	7,190.00	33.18	32.62	56.23	595.54	537.41	58.12	10.246	0		
11,600.00	7,520.00	11,235.64	7,190.00	33.82	33.27	56.23	595.54	536.28	59.26	10.050	0		
11,700.00	7,520.00	11,335.64	7,190.00	34.47	33.92	56.23	595.54	535.14	60.40	9.860	0		
11,800.00	7,520.00	11,435.64	7,190.00	35.12	34.58	56.23	595.54	534.00	61.54	9.677	0		
11,900.00	7,520.00	11,535.64	7,190.00	35.77	35.24	56.23	595.53	532.85	62.68	9.501	0		
12,000.00	7,520.00	11,635.64	7,190.00	36.42	35.90	56.23	595.53	531.70	63.83	9.330	0		
12,100.00	7,520.00	11,735.64	7,190.00	37.07	36.56	56.23	595.53	530.55	64.98	9.165	0		
12,200.00	7,520.00	11,835.64	7,190.00	37.73	37.22	56.23	595.53	529.40	66.13	9.005	0		
12,300.00	7,520.00	11,935.64	7,190.00	38.39	37.88	56.23	595.53	528.24	67.29	8.850	0		
12,400.00	7,520.00	12,035.64	7,190.00	39.05	38.55	56.23	595.53	527.09	68.45	8.701	0		
12,500.00	7,520.00	12,135.64	7,190.00	39.71	39.21	56.23	595.53	525.93	69.61	8.556	0		
12,600.00	7,520.00	12,235.64	7,190.00	40.37	39.88	56.23	595.53	524.76	70.77	8.415	0		
12,700.00	7,520.00	12,335.64	7,190.00	41.04	40.55	56.23	595.53	523.60	71.93	8.279	0		
12,800.00	7,520.00	12,435.64	7,190.00	41.70	41.22	56.23	595.53	522.43	73.10	8.147	0		
12,900.00	7,520.00	12,535.64	7,190.00	42.37	41.89	56.23	595.53	521.27	74.27	8.019	0		
13,000.00	7,520.00	12,635.64	7,190.00	43.03	42.56	56.23	595.53	520.10	75.44	7.895	0		
13,100.00	7,520.00	12,735.64	7,190.00	43.70	43.24	56.23	595.53	518.93	76.61	7.774	0		
13,200.00	7,520.00	12,835.64	7,190.00	44.37	43.91	56.23	595.53	517.75	77.78	7.657	0		
13,300.00	7,520.00	12,935.64	7,190.00	45.04	44.59	56.23	595.53	516.58	78.95	7.543	0		
13,400.00	7,520.00	13,035.64	7,190.00	45.72	45.26	56.23	595.53	515.40	80.13	7.432	0		
13,500.00	7,520.00	13,135.64	7,190.00	46.39	45.94	56.23	595.53	514.23	81.30	7.325	0		
13,600.00	7,520.00	13,235.64	7,190.00	47.06	46.62	56.23	595.53	513.05	82.48	7.220	0		
13,700.00	7,520.00	13,335.64	7,190.00	47.74	47.30	56.23	595.53	511.87	83.66	7.118	0		
13,800.00	7,520.00	13,435.64	7,190.00	48.41	47.97	56.23	595.53	510.69	84.84	7.019	0		
13,900.00	7,520.00	13,535.64	7,190.00	49.09	48.65	56.23	595.53	509.51	86.02	6.923	0		
14,000.00	7,520.00	13,635.64	7,190.00	49.76	49.33	56.23	595.53	508.32	87.20	6.829	0		
14,100.00	7,520.00	13,735.64	7,190.00	50.44	50.02	56.23	595.53	507.14	88.39	6.738	0		
14,200.00	7,520.00	13,835.64	7,190.00	51.12	50.70	56.23	595.53	505.96	89.57	6.649	0		
14,300.00	7,520.00	13,935.64	7,190.00	51.80	51.38	56.23	595.53	504.77	90.76	6.562	0		
14,400.00	7,520.00	14,035.64	7,190.00	52.48	52.06	56.23	595.53	503.58	91.94	6.477	0		
14,500.00	7,520.00	14,135.64	7,190.00	53.16	52.75	56.23	595.53	502.40	93.13	6.394	0		
14,600.00	7,520.00	14,235.64	7,190.00	53.84	53.43	56.23	595.53	501.21	94.32	6.314	0		
14,700.00	7,520.00	14,335.64	7,190.00	54.52	54.11	56.23	595.53	500.02	95.51	6.235	0		

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



Schlumberger
Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
14,800.00	7,520.00	14,435.64	7,190.00	55.20	54.80	56.23	595.53	498.83	96.70	6.159	0			
14,900.00	7,520.00	14,535.64	7,190.00	55.89	55.48	56.23	595.53	497.64	97.89	6.084	0			
15,000.00	7,520.00	14,635.64	7,190.00	56.57	56.17	56.23	595.53	496.45	99.08	6.011	0			
15,100.00	7,520.00	14,735.64	7,190.00	57.25	56.86	56.23	595.53	495.25	100.27	5.939	0			
15,200.00	7,520.00	14,835.64	7,190.00	57.94	57.54	56.23	595.53	494.06	101.47	5.869	0			
15,300.00	7,520.00	14,935.64	7,190.00	58.62	58.23	56.23	595.53	492.87	102.66	5.801	0			
15,400.00	7,520.00	15,035.64	7,190.00	59.30	58.92	56.23	595.53	491.67	103.85	5.734	0			
15,500.00	7,520.00	15,135.64	7,190.00	59.99	59.61	56.23	595.53	490.48	105.05	5.669	0			
15,600.00	7,520.00	15,235.64	7,190.00	60.68	60.29	56.23	595.53	489.28	106.24	5.605	0			
15,700.00	7,520.00	15,335.64	7,190.00	61.36	60.98	56.23	595.52	488.09	107.44	5.543	0			
15,800.00	7,520.00	15,435.64	7,190.00	62.05	61.67	56.23	595.52	486.89	108.63	5.482	0			
15,900.00	7,520.00	15,535.64	7,190.00	62.74	62.36	56.23	595.52	485.69	109.83	5.422	0			
16,000.00	7,520.00	15,635.64	7,190.00	63.42	63.05	56.23	595.52	484.50	111.03	5.364	0			
16,100.00	7,520.00	15,735.64	7,190.00	64.11	63.74	56.23	595.52	483.30	112.23	5.306	0			
16,200.00	7,520.00	15,835.64	7,190.00	64.80	64.43	56.23	595.52	482.10	113.43	5.250	0			
16,300.00	7,520.00	15,935.64	7,190.00	65.49	65.12	56.23	595.52	480.90	114.62	5.195	0			
16,400.00	7,520.00	16,035.64	7,190.00	66.18	65.81	56.23	595.52	479.70	115.82	5.142	0			
16,500.00	7,520.00	16,135.64	7,190.00	66.86	66.50	56.23	595.52	478.50	117.02	5.089	0			
16,600.00	7,520.00	16,235.64	7,190.00	67.55	67.19	56.23	595.52	477.30	118.22	5.037	0			
16,700.00	7,520.00	16,335.64	7,190.00	68.24	67.88	56.23	595.52	476.10	119.42	4.987	0			
16,800.00	7,520.00	16,435.64	7,190.00	68.93	68.58	56.23	595.52	474.90	120.63	4.937	0			
16,900.00	7,520.00	16,535.64	7,190.00	69.62	69.27	56.23	595.52	473.70	121.83	4.888	0			
17,000.00	7,520.00	16,635.64	7,190.00	70.31	69.96	56.23	595.52	472.49	123.03	4.841	0			
17,100.00	7,520.00	16,735.64	7,190.00	71.00	70.65	56.23	595.52	471.29	124.23	4.794	0			
17,200.00	7,520.00	16,835.64	7,190.00	71.69	71.35	56.23	595.52	470.09	125.43	4.748	0			
17,300.00	7,520.00	16,935.64	7,190.00	72.39	72.04	56.23	595.52	468.88	126.64	4.703	0			
17,400.00	7,520.00	17,035.64	7,190.00	73.08	72.73	56.23	595.52	467.68	127.84	4.658	0			
17,500.00	7,520.00	17,135.64	7,190.00	73.77	73.42	56.23	595.52	466.48	129.04	4.615	0			
17,546.29	7,520.00	17,181.93	7,190.00	74.09	73.75	56.23	595.52	465.82	129.70	4.592	0			
17,582.23	7,520.00	17,217.27	7,190.00	74.34	73.99	56.23	595.53	465.50	130.03	4.580	0		SF	



Schlumberger

Anticollision Risk Report



Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
0.00	0.00	2.00	2.00	0.00	0.00	179.93	84.16						CC, ES	
100.00	100.00	102.00	102.00	0.15	0.15	179.93	84.16	83.86	0.30	283.642	0			
200.00	200.00	202.00	202.00	0.32	0.32	179.93	84.16	83.51	0.65	130.322	0			
300.00	300.00	302.00	302.00	0.50	0.50	179.93	84.16	83.16	0.99	84.595	0			
400.00	400.00	402.00	402.00	0.67	0.67	179.93	84.16	82.81	1.34	62.622	0			
500.00	500.00	502.00	502.00	0.84	0.85	179.93	84.16	82.47	1.69	49.710	0			
600.00	600.00	602.00	602.00	1.02	1.02	179.93	84.16	82.12	2.04	41.213	0			
700.00	700.00	702.00	702.00	1.19	1.20	179.93	84.16	81.77	2.39	35.196	0			
800.00	799.98	801.98	801.98	1.37	1.37	-147.40	85.62	82.88	2.74	31.254	0			
900.00	899.84	901.84	901.84	1.54	1.55	-149.15	90.08	86.99	3.09	29.182	0			
1,000.00	999.45	1,001.47	1,001.47	1.72	1.72	-151.70	97.67	94.23	3.43	28.456	0			
1,100.00	1,098.70	1,102.51	1,102.49	1.90	1.90	-153.84	107.71	103.94	3.78	28.509	0			
1,161.05	1,159.06	1,164.27	1,164.18	2.01	2.00	-154.56	114.64	110.65	3.99	28.740	0			
1,200.00	1,197.51	1,203.73	1,203.56	2.08	2.07	-154.79	119.11	114.98	4.13	28.858	0			
1,300.00	1,296.22	1,304.74	1,304.18	2.27	2.25	-154.40	129.48	124.99	4.48	28.879	0			
1,400.00	1,394.92	1,404.24	1,403.20	2.45	2.43	-153.71	139.39	134.55	4.84	28.809	0			
1,500.00	1,493.63	1,503.73	1,502.22	2.64	2.61	-153.11	149.32	144.12	5.19	28.745	0			
1,600.00	1,592.34	1,603.23	1,601.24	2.83	2.78	-152.59	159.26	153.71	5.55	28.688	0			
1,700.00	1,691.05	1,702.72	1,700.26	3.02	2.96	-152.13	169.22	163.31	5.91	28.636	0			
1,800.00	1,789.76	1,802.22	1,799.28	3.21	3.14	-151.72	179.18	172.92	6.27	28.588	0			
1,900.00	1,888.46	1,901.71	1,898.30	3.40	3.32	-151.35	189.16	182.53	6.63	28.545	0			
2,000.00	1,987.17	2,001.21	1,997.32	3.59	3.50	-151.02	199.14	192.15	6.99	28.505	0			
2,100.00	2,085.88	2,100.70	2,096.34	3.78	3.67	-150.72	209.12	201.78	7.35	28.468	0			
2,200.00	2,184.59	2,200.19	2,195.36	3.97	3.85	-150.45	219.11	211.41	7.71	28.434	0			
2,300.00	2,283.29	2,299.69	2,294.38	4.16	4.03	-150.20	229.11	221.04	8.07	28.402	0			
2,400.00	2,382.00	2,399.18	2,393.40	4.35	4.21	-149.97	239.11	230.68	8.43	28.372	0			
2,500.00	2,480.71	2,498.68	2,492.42	4.54	4.39	-149.76	249.11	240.32	8.79	28.344	0			
2,600.00	2,579.42	2,598.17	2,591.44	4.74	4.57	-149.57	259.12	249.97	9.15	28.317	0			
2,700.00	2,678.13	2,697.67	2,690.46	4.93	4.75	-149.39	269.13	259.62	9.51	28.293	0			
2,800.00	2,776.83	2,797.16	2,789.48	5.12	4.93	-149.22	279.14	269.27	9.87	28.270	0			
2,900.00	2,875.54	2,896.66	2,888.50	5.31	5.11	-149.07	289.15	278.92	10.24	28.249	0			
3,000.00	2,974.25	2,996.15	2,987.52	5.50	5.29	-148.93	299.17	288.57	10.60	28.228	0			
3,100.00	3,072.96	3,095.64	3,086.54	5.70	5.47	-148.79	309.19	298.23	10.96	28.209	0			
3,200.00	3,171.66	3,195.14	3,185.56	5.89	5.65	-148.67	319.21	307.88	11.32	28.191	0			
3,300.00	3,270.37	3,294.63	3,284.58	6.08	5.83	-148.55	329.23	317.54	11.69	28.174	0			
3,400.00	3,369.08	3,394.13	3,383.61	6.27	6.01	-148.44	339.25	327.20	12.05	28.158	0			
3,500.00	3,467.79	3,493.62	3,482.63	6.47	6.19	-148.33	349.27	336.86	12.41	28.143	0			
3,600.00	3,566.50	3,593.12	3,581.65	6.66	6.37	-148.23	359.29	346.52	12.77	28.129	0			
3,700.00	3,665.20	3,692.61	3,680.67	6.85	6.55	-148.14	369.32	356.18	13.14	28.115	0			
3,800.00	3,763.91	3,792.11	3,779.69	7.05	6.73	-148.05	379.35	365.85	13.50	28.102	0			
3,900.00	3,862.62	3,891.60	3,878.71	7.24	6.91	-147.96	389.37	375.51	13.86	28.089	0			
4,000.00	3,961.33	3,991.09	3,977.73	7.43	7.09	-147.88	399.40	385.17	14.22	28.078	0			
4,100.00	4,060.03	4,090.59	4,076.75	7.62	7.28	-147.81	409.43	394.84	14.59	28.066	0			
4,200.00	4,158.74	4,190.08	4,175.77	7.82	7.46	-147.73	419.46	404.51	14.95	28.055	0			
4,300.00	4,257.45	4,289.58	4,274.79	8.01	7.64	-147.67	429.49	414.17	15.31	28.045	0			
4,400.00	4,356.16	4,389.07	4,373.81	8.20	7.82	-147.60	439.52	423.84	15.68	28.035	0			
4,500.00	4,454.87	4,488.57	4,472.83	8.40	8.00	-147.54	449.55	433.51	16.04	28.026	0			
4,600.00	4,553.57	4,588.06	4,571.85	8.59	8.18	-147.48	459.58	443.17	16.40	28.016	0			
4,700.00	4,652.28	4,687.56	4,670.87	8.78	8.36	-147.42	469.61	452.84	16.77	28.008	0			
4,800.00	4,750.99	4,787.05	4,769.89	8.98	8.54	-147.36	479.64	462.51	17.13	27.999	0			
4,900.00	4,849.70	4,886.54	4,868.91	9.17	8.72	-147.31	489.67	472.18	17.49	27.991	0			
5,000.00	4,948.40	4,986.04	4,967.93	9.36	8.90	-147.26	499.71	481.85	17.86	27.983	0			
5,100.00	5,047.11	5,085.53	5,066.95	9.56	9.08	-147.21	509.74	491.52	18.22	27.976	0			
5,200.00	5,145.82	5,185.03	5,165.97	9.75	9.26	-147.16	519.77	501.19	18.58	27.969	0			

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



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder												Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
5,300.00	5,244.53	5,284.52	5,264.99	9.94	9.44	-147.12	529.81	510.86	18.95	27.962	0		
5,400.00	5,343.24	5,384.02	5,364.01	10.14	9.62	-147.07	539.84	520.53	19.31	27.955	0		
5,500.00	5,441.94	5,483.51	5,463.03	10.33	9.80	-147.03	549.88	530.20	19.67	27.948	0		
5,600.00	5,540.65	5,583.01	5,562.05	10.52	9.98	-146.99	559.91	539.87	20.04	27.942	0		
5,700.00	5,639.36	5,682.50	5,661.07	10.72	10.17	-146.95	569.95	549.55	20.40	27.936	0		
5,800.00	5,738.07	5,781.99	5,760.09	10.91	10.35	-146.92	579.98	559.22	20.77	27.930	0		
5,900.00	5,836.77	5,881.49	5,859.11	11.10	10.53	-146.88	590.02	568.89	21.13	27.924	0		
6,000.00	5,935.48	5,980.98	5,958.13	11.30	10.71	-146.84	600.05	578.56	21.49	27.919	0		
6,100.00	6,034.19	6,080.48	6,057.15	11.49	10.89	-146.81	610.09	588.23	21.86	27.913	0		
6,200.00	6,132.90	6,179.97	6,156.17	11.68	11.07	-146.78	620.13	597.91	22.22	27.908	0		
6,300.00	6,231.61	6,279.47	6,255.19	11.88	11.25	-146.75	630.16	607.58	22.58	27.903	0		
6,393.93	6,324.32	6,372.92	6,348.20	12.06	11.42	-146.72	639.59	616.67	22.93	27.899	0		
6,400.00	6,330.31	6,378.96	6,354.21	12.07	11.43	-146.72	640.20	617.25	22.95	27.896	0		
6,500.00	6,429.31	6,478.59	6,453.37	12.26	11.61	-146.69	648.60	625.27	23.33	27.800	0		
6,600.00	6,528.74	6,574.82	6,549.17	12.44	11.79	-146.50	654.25	630.55	23.69	27.616	0		
6,700.00	6,628.48	6,667.45	6,641.59	12.61	11.95	-146.36	657.96	633.93	24.02	27.388	0		
6,800.00	6,728.41	6,760.16	6,734.25	12.77	12.11	-146.29	659.87	635.54	24.34	27.115	0		
6,854.98	6,783.38	6,811.29	6,785.38	12.86	12.19	-179.58	660.16	635.57	24.58	26.856	0		
6,900.00	6,828.40	6,856.32	6,830.40	12.93	12.27	-179.58	660.16	635.42	24.73	26.691	0		
6,954.98	6,883.38	6,911.31	6,885.40	13.02	12.36	-179.58	660.16	635.24	24.92	26.491	0		
7,000.00	6,928.37	6,956.67	6,930.72	13.09	12.44	90.41	660.15	635.17	24.99	26.422	0		
7,050.00	6,978.05	7,007.04	6,980.74	13.17	12.51	90.39	660.15	635.01	25.14	26.260	0		
7,100.00	7,027.15	7,057.38	7,030.14	13.24	12.59	90.37	660.15	634.87	25.29	26.108	0		
7,150.00	7,075.37	7,107.71	7,078.60	13.30	12.66	90.35	660.15	634.73	25.42	25.965	0		
7,200.00	7,122.40	7,158.02	7,125.83	13.37	12.72	90.32	660.15	634.59	25.56	25.830	0		
7,250.00	7,167.96	7,208.30	7,171.51	13.43	12.79	90.30	660.15	634.46	25.69	25.701	0		
7,300.00	7,211.76	7,258.56	7,215.39	13.49	12.85	90.27	660.15	634.33	25.81	25.576	0		
7,350.00	7,253.54	7,308.79	7,257.17	13.55	12.91	90.24	660.14	634.21	25.93	25.454	0		
7,400.00	7,293.04	7,358.99	7,296.60	13.61	12.97	90.21	660.14	634.08	26.06	25.332	0		
7,450.00	7,330.01	7,409.17	7,333.45	13.67	13.04	90.18	660.14	633.95	26.19	25.208	0		
7,500.00	7,364.22	7,459.31	7,367.48	13.73	13.10	90.14	660.14	633.82	26.32	25.080	0		
7,550.00	7,395.48	7,509.42	7,398.49	13.79	13.17	90.11	660.14	633.68	26.46	24.946	0		
7,600.00	7,423.57	7,559.51	7,426.30	13.86	13.24	90.07	660.14	633.52	26.61	24.804	0		
7,650.00	7,448.34	7,609.56	7,450.73	13.93	13.32	90.04	660.14	633.36	26.78	24.652	0		
7,700.00	7,469.62	7,659.57	7,471.65	14.01	13.40	90.00	660.14	633.18	26.96	24.490	0		
7,703.86	7,471.11	7,663.43	7,473.11	14.01	13.40	90.00	660.14	633.02	27.12	24.343	0		
7,750.00	7,487.29	7,709.56	7,488.92	14.09	13.49	89.97	660.14	632.99	27.15	24.316	0		
7,800.00	7,501.23	7,759.51	7,502.46	14.18	13.60	89.93	660.14	632.78	27.36	24.131	0		
7,850.00	7,511.36	7,809.43	7,512.18	14.28	13.72	89.90	660.14	632.56	27.58	23.933	0		
7,900.00	7,517.63	7,859.32	7,518.04	14.38	13.84	89.86	660.14	632.32	27.82	23.725	0		
7,954.98	7,520.00	7,914.15	7,520.00	14.51	13.99	89.83	660.14	632.03	28.11	23.485	0		
8,000.00	7,520.00	7,959.18	7,520.00	14.63	14.12	89.83	660.14	631.78	28.36	23.278	0		
8,100.00	7,520.00	8,059.18	7,520.00	14.90	14.42	89.83	660.14	631.19	28.95	22.802	0		
8,200.00	7,520.00	8,159.18	7,520.00	15.22	14.74	89.83	660.14	630.54	29.60	22.303	0		
8,300.00	7,520.00	8,259.18	7,520.00	15.56	15.09	89.83	660.14	629.84	30.30	21.789	0		
8,400.00	7,520.00	8,359.18	7,520.00	15.92	15.47	89.83	660.14	629.10	31.04	21.265	0		
8,500.00	7,520.00	8,459.18	7,520.00	16.31	15.87	89.83	660.14	628.31	31.83	20.736	0		
8,600.00	7,520.00	8,559.18	7,520.00	16.72	16.29	89.83	660.14	627.47	32.67	20.208	0		
8,700.00	7,520.00	8,659.18	7,520.00	17.15	16.72	89.83	660.14	626.60	33.54	19.683	0		
8,800.00	7,520.00	8,759.18	7,520.00	17.59	17.18	89.83	660.14	625.70	34.45	19.165	0		
8,900.00	7,520.00	8,859.18	7,520.00	18.05	17.65	89.83	660.14	624.76	35.38	18.656	0		
9,000.00	7,520.00	8,959.18	7,520.00	18.53	18.13	89.83	660.14	623.79	36.35	18.159	0		
9,100.00	7,520.00	9,059.18	7,520.00	19.02	18.63	89.83	660.14	622.79	37.35	17.674	0		
9,200.00	7,520.00	9,159.18	7,520.00	19.53	19.15	89.83	660.14	621.77	38.37	17.202	0		

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



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder												Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
9,300.00	7,520.00	9,259.18	7,520.00	20.04	19.67	89.83	660.14	620.72	39.42	16.746	0		
9,400.00	7,520.00	9,359.18	7,520.00	20.57	20.21	89.83	660.14	619.65	40.49	16.304	0		
9,500.00	7,520.00	9,459.18	7,520.00	21.11	20.75	89.83	660.14	618.56	41.58	15.877	0		
9,600.00	7,520.00	9,559.18	7,520.00	21.65	21.31	89.83	660.14	617.45	42.69	15.465	0		
9,700.00	7,520.00	9,659.18	7,520.00	22.21	21.87	89.83	660.14	616.33	43.81	15.068	0		
9,800.00	7,520.00	9,759.18	7,520.00	22.77	22.44	89.83	660.14	615.19	44.95	14.686	0		
9,900.00	7,520.00	9,859.18	7,520.00	23.34	23.02	89.83	660.14	614.03	46.11	14.318	0		
10,000.00	7,520.00	9,959.18	7,520.00	23.92	23.60	89.83	660.14	612.87	47.28	13.964	0		
10,100.00	7,520.00	10,059.18	7,520.00	24.51	24.20	89.83	660.14	611.68	48.46	13.623	0		
10,200.00	7,520.00	10,159.18	7,520.00	25.10	24.79	89.83	660.14	610.49	49.65	13.296	0		
10,300.00	7,520.00	10,259.18	7,520.00	25.69	25.40	89.83	660.14	609.29	50.86	12.981	0		
10,400.00	7,520.00	10,359.18	7,520.00	26.29	26.00	89.83	660.14	608.07	52.07	12.678	0		
10,500.00	7,520.00	10,459.18	7,520.00	26.90	26.62	89.83	660.14	606.85	53.29	12.387	0		
10,600.00	7,520.00	10,559.18	7,520.00	27.51	27.23	89.83	660.14	605.61	54.53	12.107	0		
10,700.00	7,520.00	10,659.18	7,520.00	28.13	27.85	89.83	660.14	604.37	55.77	11.837	0		
10,800.00	7,520.00	10,759.18	7,520.00	28.75	28.48	89.83	660.14	603.12	57.02	11.578	0		
10,900.00	7,520.00	10,859.18	7,520.00	29.37	29.11	89.83	660.14	601.87	58.27	11.329	0		
11,000.00	7,520.00	10,959.18	7,520.00	30.00	29.74	89.83	660.14	600.61	59.54	11.088	0		
11,100.00	7,520.00	11,059.18	7,520.00	30.63	30.37	89.83	660.14	599.34	60.80	10.857	0		
11,200.00	7,520.00	11,159.18	7,520.00	31.26	31.01	89.83	660.14	598.06	62.08	10.634	0		
11,300.00	7,520.00	11,259.18	7,520.00	31.90	31.65	89.83	660.14	596.78	63.36	10.419	0		
11,400.00	7,520.00	11,359.18	7,520.00	32.54	32.30	89.83	660.14	595.50	64.65	10.212	0		
11,500.00	7,520.00	11,459.18	7,520.00	33.18	32.94	89.83	660.14	594.20	65.94	10.012	0		
11,600.00	7,520.00	11,559.18	7,520.00	33.82	33.59	89.83	660.14	592.91	67.23	9.819	0		
11,700.00	7,520.00	11,659.18	7,520.00	34.47	34.24	89.83	660.14	591.61	68.53	9.633	0		
11,800.00	7,520.00	11,759.18	7,520.00	35.12	34.89	89.83	660.14	590.31	69.84	9.453	0		
11,900.00	7,520.00	11,859.18	7,520.00	35.77	35.55	89.83	660.14	589.00	71.14	9.279	0		
12,000.00	7,520.00	11,959.18	7,520.00	36.42	36.20	89.83	660.14	587.69	72.46	9.111	0		
12,100.00	7,520.00	12,059.18	7,520.00	37.07	36.86	89.83	660.14	586.37	73.77	8.949	0		
12,200.00	7,520.00	12,159.18	7,520.00	37.73	37.52	89.83	660.14	585.05	75.09	8.791	0		
12,300.00	7,520.00	12,259.18	7,520.00	38.39	38.18	89.83	660.14	583.73	76.41	8.639	0		
12,400.00	7,520.00	12,359.18	7,520.00	39.05	38.85	89.83	660.14	582.41	77.74	8.492	0		
12,500.00	7,520.00	12,459.18	7,520.00	39.71	39.51	89.83	660.14	581.08	79.06	8.349	0		
12,600.00	7,520.00	12,559.18	7,520.00	40.37	40.17	89.83	660.14	579.75	80.39	8.211	0		
12,700.00	7,520.00	12,659.18	7,520.00	41.04	40.84	89.83	660.14	578.41	81.73	8.077	0		
12,800.00	7,520.00	12,759.18	7,520.00	41.70	41.51	89.83	660.14	577.08	83.06	7.948	0		
12,900.00	7,520.00	12,859.18	7,520.00	42.37	42.18	89.83	660.14	575.74	84.40	7.822	0		
13,000.00	7,520.00	12,959.18	7,520.00	43.03	42.85	89.83	660.14	574.40	85.74	7.699	0		
13,100.00	7,520.00	13,059.18	7,520.00	43.70	43.52	89.83	660.14	573.06	87.08	7.581	0		
13,200.00	7,520.00	13,159.18	7,520.00	44.37	44.19	89.83	660.14	571.72	88.43	7.466	0		
13,300.00	7,520.00	13,259.18	7,520.00	45.04	44.87	89.83	660.14	570.37	89.77	7.354	0		
13,400.00	7,520.00	13,359.18	7,520.00	45.72	45.54	89.83	660.14	569.02	91.12	7.245	0		
13,500.00	7,520.00	13,459.18	7,520.00	46.39	46.21	89.83	660.14	567.67	92.47	7.139	0		
13,600.00	7,520.00	13,559.18	7,520.00	47.06	46.89	89.83	660.14	566.32	93.82	7.036	0		
13,700.00	7,520.00	13,659.18	7,520.00	47.74	47.57	89.83	660.14	564.97	95.17	6.936	0		
13,800.00	7,520.00	13,759.18	7,520.00	48.41	48.24	89.83	660.14	563.61	96.53	6.839	0		
13,900.00	7,520.00	13,859.18	7,520.00	49.09	48.92	89.83	660.14	562.26	97.88	6.744	0		
14,000.00	7,520.00	13,959.18	7,520.00	49.76	49.60	89.83	660.14	560.90	99.24	6.652	0		
14,100.00	7,520.00	14,059.18	7,520.00	50.44	50.28	89.83	660.14	559.54	100.60	6.562	0		
14,200.00	7,520.00	14,159.18	7,520.00	51.12	50.96	89.83	660.14	558.18	101.96	6.475	0		
14,300.00	7,520.00	14,259.18	7,520.00	51.80	51.64	89.83	660.14	556.82	103.32	6.389	0		
14,400.00	7,520.00	14,359.18	7,520.00	52.48	52.32	89.83	660.14	555.46	104.68	6.306	0		
14,500.00	7,520.00	14,459.18	7,520.00	53.16	53.01	89.83	660.14	554.09	106.05	6.225	0		
14,600.00	7,520.00	14,559.18	7,520.00	53.84	53.69	89.83	660.14	552.73	107.41	6.146	0		

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



Schlumberger
Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
14,700.00	7,520.00	14,659.18	7,520.00	54.52	54.37	89.83	660.14	551.36	108.78	6.069	0		
14,800.00	7,520.00	14,759.18	7,520.00	55.20	55.05	89.83	660.14	550.00	110.14	5.993	0		
14,900.00	7,520.00	14,859.18	7,520.00	55.89	55.74	89.83	660.14	548.63	111.51	5.920	0		
15,000.00	7,520.00	14,959.18	7,520.00	56.57	56.42	89.83	660.14	547.26	112.88	5.848	0		
15,100.00	7,520.00	15,059.18	7,520.00	57.25	57.11	89.83	660.14	545.89	114.25	5.778	0		
15,200.00	7,520.00	15,159.18	7,520.00	57.94	57.79	89.83	660.14	544.52	115.62	5.710	0		
15,300.00	7,520.00	15,259.18	7,520.00	58.62	58.48	89.83	660.14	543.15	116.99	5.643	0		
15,400.00	7,520.00	15,359.18	7,520.00	59.30	59.17	89.83	660.14	541.78	118.37	5.577	0		
15,500.00	7,520.00	15,459.18	7,520.00	59.99	59.85	89.83	660.14	540.40	119.74	5.513	0		
15,600.00	7,520.00	15,559.18	7,520.00	60.68	60.54	89.83	660.14	539.03	121.11	5.451	0		
15,700.00	7,520.00	15,659.18	7,520.00	61.36	61.23	89.83	660.14	537.65	122.49	5.389	0		
15,800.00	7,520.00	15,759.18	7,520.00	62.05	61.92	89.83	660.14	536.28	123.86	5.330	0		
15,900.00	7,520.00	15,859.18	7,520.00	62.74	62.60	89.83	660.14	534.90	125.24	5.271	0		
16,000.00	7,520.00	15,959.18	7,520.00	63.42	63.29	89.83	660.14	533.53	126.62	5.214	0		
16,100.00	7,520.00	16,059.18	7,520.00	64.11	63.98	89.83	660.14	532.15	127.99	5.158	0		
16,200.00	7,520.00	16,159.18	7,520.00	64.80	64.67	89.83	660.14	530.77	129.37	5.103	0		
16,300.00	7,520.00	16,259.18	7,520.00	65.49	65.36	89.83	660.14	529.39	130.75	5.049	0		
16,400.00	7,520.00	16,359.18	7,520.00	66.18	66.05	89.83	660.14	528.01	132.13	4.996	0		
16,500.00	7,520.00	16,459.18	7,520.00	66.86	66.74	89.83	660.14	526.63	133.51	4.945	0		
16,600.00	7,520.00	16,559.18	7,520.00	67.55	67.43	89.83	660.14	525.25	134.89	4.894	0		
16,700.00	7,520.00	16,659.18	7,520.00	68.24	68.12	89.83	660.14	523.87	136.27	4.844	0		
16,800.00	7,520.00	16,759.18	7,520.00	68.93	68.81	89.83	660.14	522.49	137.65	4.796	0		
16,900.00	7,520.00	16,859.18	7,520.00	69.62	69.50	89.83	660.14	521.11	139.03	4.748	0		
17,000.00	7,520.00	16,959.18	7,520.00	70.31	70.19	89.83	660.14	519.72	140.42	4.701	0		
17,100.00	7,520.00	17,059.18	7,520.00	71.00	70.89	89.83	660.14	518.34	141.80	4.655	0		
17,200.00	7,520.00	17,159.18	7,520.00	71.69	71.58	89.83	660.14	516.96	143.18	4.610	0		
17,300.00	7,520.00	17,259.18	7,520.00	72.39	72.27	89.83	660.14	515.57	144.57	4.566	0		
17,400.00	7,520.00	17,359.18	7,520.00	73.08	72.96	89.83	660.14	514.19	145.95	4.523	0		
17,500.00	7,520.00	17,459.18	7,520.00	73.77	73.65	89.83	660.14	512.80	147.34	4.480	0		
17,582.23	7,520.00	17,541.77	7,520.00	74.34	74.23	89.83	660.11	511.64	148.48	4.446	0	SF	



Schlumberger

Anticollision Risk Report



Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
0.00	0.00	2.00	2.00	0.00	0.00	179.98	112.21						0	
100.00	100.00	102.00	102.00	0.15	0.15	179.98	112.21	111.91	0.30	378.191	0		0	
200.00	200.00	202.00	202.00	0.32	0.32	179.98	112.21	111.57	0.65	173.764	0		0	
300.00	300.00	302.00	302.00	0.50	0.50	179.98	112.21	111.22	0.99	112.794	0		0	
400.00	400.00	402.00	402.00	0.67	0.67	179.98	112.21	110.87	1.34	83.497	0		0	
500.00	500.00	502.00	502.00	0.84	0.85	179.98	112.21	110.52	1.69	66.281	0		0	
600.00	600.00	602.00	602.00	1.02	1.02	179.98	112.21	110.17	2.04	54.951	0		0	
700.00	700.00	702.00	702.00	1.19	1.20	179.98	112.21	109.82	2.39	46.929	0		0	CC, ES
800.00	799.98	801.98	801.98	1.37	1.37	-147.20	113.67	110.94	2.74	41.493	0		0	
900.00	899.84	901.84	901.84	1.54	1.55	-148.52	118.11	115.02	3.09	38.263	0		0	
1,000.00	999.45	1,001.45	1,001.45	1.72	1.72	-150.52	125.63	122.20	3.43	36.600	0		0	
1,100.00	1,098.70	1,100.71	1,100.71	1.90	1.89	-152.94	136.38	132.61	3.78	36.118	0		0	
1,161.05	1,159.06	1,161.79	1,161.79	2.01	2.00	-154.28	144.44	140.46	3.99	36.243	0		0	
1,200.00	1,197.51	1,200.81	1,200.79	2.08	2.07	-154.91	149.83	145.71	4.12	36.341	0		0	
1,300.00	1,296.22	1,301.28	1,301.12	2.27	2.24	-155.51	163.12	158.64	4.48	36.434	0		0	
1,400.00	1,394.92	1,401.75	1,401.19	2.45	2.42	-154.91	175.54	170.71	4.83	36.332	0		0	
1,500.00	1,493.63	1,500.97	1,499.92	2.64	2.60	-154.02	187.70	182.51	5.19	36.192	0		0	
1,600.00	1,592.34	1,600.19	1,598.64	2.83	2.77	-153.24	199.89	194.34	5.54	36.070	0		0	
1,700.00	1,691.05	1,699.41	1,697.36	3.02	2.95	-152.55	212.11	206.21	5.90	35.962	0		0	
1,800.00	1,789.76	1,798.63	1,796.08	3.21	3.13	-151.93	224.36	218.11	6.26	35.866	0		0	
1,900.00	1,888.46	1,897.85	1,894.80	3.40	3.31	-151.38	236.63	230.02	6.61	35.779	0		0	
2,000.00	1,987.17	1,997.06	1,993.53	3.59	3.48	-150.88	248.93	241.95	6.97	35.698	0		0	
2,100.00	2,085.88	2,096.28	2,092.25	3.78	3.66	-150.43	261.24	253.90	7.33	35.624	0		0	
2,200.00	2,184.59	2,195.50	2,190.97	3.97	3.84	-150.02	273.56	265.87	7.69	35.557	0		0	
2,300.00	2,283.29	2,294.72	2,289.69	4.16	4.02	-149.65	285.90	277.84	8.05	35.496	0		0	
2,400.00	2,382.00	2,393.94	2,388.42	4.35	4.20	-149.30	298.25	289.83	8.42	35.440	0		0	
2,500.00	2,480.71	2,493.16	2,487.14	4.54	4.38	-148.98	310.61	301.83	8.78	35.389	0		0	
2,600.00	2,579.42	2,592.38	2,585.86	4.74	4.56	-148.69	322.97	313.83	9.14	35.341	0		0	
2,700.00	2,678.13	2,691.60	2,684.58	4.93	4.74	-148.42	335.35	325.85	9.50	35.298	0		0	
2,800.00	2,776.83	2,790.82	2,783.30	5.12	4.91	-148.17	347.73	337.86	9.86	35.257	0		0	
2,900.00	2,875.54	2,890.04	2,882.03	5.31	5.09	-147.94	360.11	349.89	10.23	35.219	0		0	
3,000.00	2,974.25	2,989.26	2,980.75	5.50	5.27	-147.72	372.51	361.92	10.59	35.184	0		0	
3,100.00	3,072.96	3,088.48	3,079.47	5.70	5.45	-147.51	384.90	373.95	10.95	35.150	0		0	
3,200.00	3,171.66	3,187.70	3,178.19	5.89	5.63	-147.32	397.31	385.99	11.31	35.119	0		0	
3,300.00	3,270.37	3,286.92	3,276.91	6.08	5.81	-147.14	409.71	398.04	11.68	35.090	0		0	
3,400.00	3,369.08	3,386.14	3,375.64	6.27	5.99	-146.97	422.12	410.08	12.04	35.063	0		0	
3,500.00	3,467.79	3,485.36	3,474.36	6.47	6.17	-146.81	434.54	422.13	12.40	35.037	0		0	
3,600.00	3,566.50	3,584.58	3,573.08	6.66	6.35	-146.66	446.95	434.19	12.77	35.013	0		0	
3,700.00	3,665.20	3,683.80	3,671.80	6.85	6.53	-146.52	459.37	446.24	13.13	34.990	0		0	
3,800.00	3,763.91	3,783.01	3,770.52	7.05	6.71	-146.38	471.80	458.30	13.49	34.968	0		0	
3,900.00	3,862.62	3,882.23	3,869.25	7.24	6.89	-146.25	484.22	470.36	13.86	34.947	0		0	
4,000.00	3,961.33	3,981.45	3,967.97	7.43	7.07	-146.13	496.65	482.43	14.22	34.927	0		0	
4,100.00	4,060.03	4,080.67	4,066.69	7.62	7.25	-146.02	509.08	494.49	14.58	34.908	0		0	
4,200.00	4,158.74	4,179.89	4,165.41	7.82	7.43	-145.90	521.51	506.56	14.95	34.891	0		0	
4,300.00	4,257.45	4,279.11	4,264.13	8.01	7.61	-145.80	533.94	518.63	15.31	34.874	0		0	
4,400.00	4,356.16	4,378.33	4,362.86	8.20	7.80	-145.70	546.37	530.70	15.67	34.857	0		0	
4,500.00	4,454.87	4,477.55	4,461.58	8.40	7.98	-145.60	558.81	542.77	16.04	34.842	0		0	
4,600.00	4,553.57	4,576.77	4,560.30	8.59	8.16	-145.51	571.25	554.85	16.40	34.827	0		0	
4,700.00	4,652.28	4,675.99	4,659.02	8.78	8.34	-145.42	583.69	566.92	16.77	34.813	0		0	
4,800.00	4,750.99	4,775.21	4,757.74	8.98	8.52	-145.34	596.13	579.00	17.13	34.799	0		0	
4,900.00	4,849.70	4,874.43	4,856.47	9.17	8.70	-145.26	608.57	591.08	17.49	34.786	0		0	
5,000.00	4,948.40	4,973.65	4,955.19	9.36	8.88	-145.18	621.01	603.15	17.86	34.774	0		0	
5,100.00	5,047.11	5,072.87	5,053.91	9.56	9.06	-145.11	633.46	615.23	18.22	34.762	0		0	
5,200.00	5,145.82	5,172.09	5,152.63	9.75	9.24	-145.03	645.90	627.31	18.59	34.750	0		0	

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



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 7 - Original Hole - Rev 0		Offset Site Error:		0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:		0.00 usft		
Reference		Offset		Semi Major Axis		Distance							Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision					
5,300.00	5,244.53	5,271.31	5,251.35	9.94	9.42	-144.96	658.35	639.40	18.95	34.739	0						
5,400.00	5,343.24	5,370.53	5,350.08	10.14	9.60	-144.90	670.79	651.48	19.32	34.728	0						
5,500.00	5,441.94	5,469.75	5,448.80	10.33	9.78	-144.83	683.24	663.56	19.68	34.718	0						
5,600.00	5,540.65	5,568.96	5,547.52	10.52	9.96	-144.77	695.69	675.65	20.04	34.708	0						
5,700.00	5,639.36	5,668.18	5,646.24	10.72	10.14	-144.71	708.14	687.73	20.41	34.698	0						
5,800.00	5,738.07	5,767.40	5,744.97	10.91	10.32	-144.66	720.59	699.82	20.77	34.689	0						
5,900.00	5,836.77	5,866.62	5,843.69	11.10	10.50	-144.60	733.04	711.90	21.14	34.680	0						
6,000.00	5,935.48	5,965.84	5,942.41	11.30	10.68	-144.55	745.49	723.99	21.50	34.671	0						
6,100.00	6,034.19	6,065.06	6,041.13	11.49	10.86	-144.49	757.94	736.08	21.87	34.663	0						
6,200.00	6,132.90	6,164.28	6,139.85	11.68	11.04	-144.44	770.39	748.16	22.23	34.655	0						
6,300.00	6,231.61	6,262.26	6,237.42	11.88	11.22	-144.46	782.90	760.31	22.59	34.659	0						
6,393.93	6,324.32	6,353.70	6,328.69	12.06	11.38	-144.69	794.85	771.93	22.92	34.682	0						
6,400.00	6,330.31	6,359.60	6,334.59	12.07	11.39	-144.72	795.63	772.68	22.94	34.681	0						
6,500.00	6,429.31	6,456.82	6,431.77	12.26	11.56	-145.24	807.03	783.72	23.31	34.627	0						
6,600.00	6,528.74	6,555.78	6,530.74	12.44	11.72	-145.76	815.79	792.13	23.66	34.484	0						
6,700.00	6,628.48	6,656.13	6,630.89	12.61	11.89	-146.44	821.69	797.70	23.98	34.260	0						
6,800.00	6,728.41	6,752.67	6,725.46	12.77	12.02	-147.92	824.94	800.68	24.26	34.005	0						
6,854.98	6,783.38	6,802.78	6,773.12	12.86	12.09	177.69	825.95	801.39	24.56	33.636	0						
6,900.00	6,828.40	6,841.85	6,809.36	12.93	12.14	176.68	826.84	802.13	24.71	33.465	0						
6,954.98	6,883.38	6,886.84	6,849.88	13.02	12.20	175.33	828.70	803.81	24.89	33.295	0						
7,000.00	6,928.37	6,922.06	6,880.57	13.09	12.24	84.02	830.85	806.12	24.73	33.597	0						
7,050.00	6,978.05	6,960.36	6,912.81	13.17	12.29	82.60	833.73	808.91	24.82	33.586	0						
7,100.00	7,027.15	7,000.00	6,944.81	13.24	12.34	81.15	837.05	812.14	24.91	33.605	0						
7,150.00	7,075.37	7,034.82	6,971.67	13.30	12.38	79.87	840.72	815.73	24.98	33.655	0						
7,200.00	7,122.40	7,071.14	6,998.36	13.37	12.42	78.57	844.66	819.61	25.04	33.729	0						
7,250.00	7,167.96	7,106.94	7,023.24	13.43	12.47	77.33	848.79	823.69	25.09	33.826	0						
7,300.00	7,211.76	7,142.29	7,046.36	13.49	12.52	76.14	853.03	827.90	25.13	33.943	0						
7,350.00	7,253.54	7,177.24	7,067.72	13.55	12.57	75.03	857.30	832.14	25.16	34.074	0						
7,400.00	7,293.04	7,211.84	7,087.34	13.61	12.62	73.98	861.54	836.36	25.18	34.217	0						
7,450.00	7,330.01	7,250.00	7,107.15	13.67	12.68	72.95	865.67	840.48	25.19	34.362	0						
7,500.00	7,364.22	7,280.13	7,121.39	13.73	12.73	72.12	869.61	844.41	25.20	34.508	0						
7,550.00	7,395.48	7,313.90	7,135.83	13.79	12.79	71.32	873.33	848.12	25.21	34.642	0						
7,600.00	7,423.57	7,350.00	7,149.46	13.86	12.85	70.56	876.77	851.54	25.23	34.754	0						
7,650.00	7,448.34	7,380.86	7,159.59	13.93	12.92	69.96	879.86	854.61	25.25	34.842	0						
7,700.00	7,469.62	7,414.11	7,168.91	14.01	12.99	69.42	882.58	857.28	25.30	34.889	0						
7,750.00	7,487.29	7,450.00	7,177.09	14.09	13.06	68.94	884.89	859.52	25.36	34.887	0						
7,800.00	7,501.23	7,480.25	7,182.45	14.18	13.14	68.60	886.74	861.29	25.45	34.840	0						
7,850.00	7,511.36	7,513.20	7,186.66	14.28	13.22	68.34	888.14	862.57	25.57	34.731	0						
7,900.00	7,517.63	7,550.00	7,189.37	14.38	13.31	68.15	889.06	863.33	25.73	34.550	0						
7,954.98	7,520.00	7,584.22	7,190.00	14.51	13.40	68.08	889.47	863.53	25.94	34.295	0						
8,000.00	7,520.00	7,629.25	7,190.00	14.63	13.53	68.08	889.47	863.28	26.19	33.967	0						
8,100.00	7,520.00	7,729.25	7,190.00	14.90	13.83	68.08	889.47	862.69	26.78	33.217	0						
8,200.00	7,520.00	7,829.25	7,190.00	15.22	14.16	68.08	889.47	862.05	27.42	32.439	0						
8,300.00	7,520.00	7,929.25	7,190.00	15.56	14.52	68.08	889.47	861.36	28.11	31.643	0						
8,400.00	7,520.00	8,029.25	7,190.00	15.92	14.90	68.08	889.47	860.62	28.84	30.837	0						
8,500.00	7,520.00	8,129.25	7,190.00	16.31	15.31	68.08	889.47	859.85	29.62	30.029	0						
8,600.00	7,520.00	8,229.25	7,190.00	16.72	15.73	68.08	889.47	859.03	30.43	29.226	0						
8,700.00	7,520.00	8,329.25	7,190.00	17.15	16.18	68.08	889.47	858.18	31.28	28.433	0						
8,800.00	7,520.00	8,429.25	7,190.00	17.59	16.64	68.08	889.47	857.30	32.16	27.654	0						
8,900.00	7,520.00	8,529.25	7,190.00	18.05	17.12	68.08	889.47	856.39	33.08	26.892	0						
9,000.00	7,520.00	8,629.25	7,190.00	18.53	17.61	68.08	889.47	855.45	34.01	26.150	0						
9,100.00	7,520.00	8,729.25	7,190.00	19.02	18.12	68.08	889.47	854.49	34.98	25.430	0						
9,200.00	7,520.00	8,829.25	7,190.00	19.53	18.64	68.08	889.47	853.50	35.96	24.732	0						
9,300.00	7,520.00	8,929.25	7,190.00	20.04	19.17	68.08	889.47	852.49	36.97	24.058	0						

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



Schlumberger

Anticollision Risk Report



Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder												Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
9,400.00	7,520.00	9,029.25	7,190.00	20.57	19.72	68.08	889.47	851.47	38.00	23.408	0		
9,500.00	7,520.00	9,129.25	7,190.00	21.11	20.27	68.08	889.47	850.42	39.04	22.781	0		
9,600.00	7,520.00	9,229.25	7,190.00	21.65	20.83	68.08	889.47	849.36	40.11	22.178	0		
9,700.00	7,520.00	9,329.25	7,190.00	22.21	21.40	68.08	889.47	848.28	41.18	21.597	0		
9,800.00	7,520.00	9,429.25	7,190.00	22.77	21.98	68.08	889.47	847.19	42.28	21.040	0		
9,900.00	7,520.00	9,529.25	7,190.00	23.34	22.57	68.08	889.47	846.09	43.38	20.504	0		
10,000.00	7,520.00	9,629.25	7,190.00	23.92	23.16	68.08	889.47	844.97	44.50	19.989	0		
10,100.00	7,520.00	9,729.25	7,190.00	24.51	23.76	68.08	889.47	843.84	45.62	19.495	0		
10,200.00	7,520.00	9,829.25	7,190.00	25.10	24.36	68.08	889.47	842.70	46.76	19.021	0		
10,300.00	7,520.00	9,929.25	7,190.00	25.69	24.97	68.08	889.47	841.55	47.91	18.565	0		
10,400.00	7,520.00	10,029.25	7,190.00	26.29	25.58	68.08	889.47	840.40	49.07	18.127	0		
10,500.00	7,520.00	10,129.25	7,190.00	26.90	26.20	68.08	889.47	839.23	50.23	17.707	0		
10,600.00	7,520.00	10,229.25	7,190.00	27.51	26.82	68.08	889.47	838.06	51.41	17.302	0		
10,700.00	7,520.00	10,329.25	7,190.00	28.13	27.45	68.08	889.47	836.88	52.59	16.914	0		
10,800.00	7,520.00	10,429.25	7,190.00	28.75	28.08	68.08	889.47	835.69	53.77	16.541	0		
10,900.00	7,520.00	10,529.25	7,190.00	29.37	28.71	68.08	889.47	834.50	54.97	16.181	0		
11,000.00	7,520.00	10,629.25	7,190.00	30.00	29.35	68.08	889.47	833.30	56.17	15.836	0		
11,100.00	7,520.00	10,729.25	7,190.00	30.63	29.99	68.08	889.47	832.09	57.37	15.503	0		
11,200.00	7,520.00	10,829.25	7,190.00	31.26	30.63	68.08	889.47	830.88	58.58	15.183	0		
11,300.00	7,520.00	10,929.25	7,190.00	31.90	31.28	68.08	889.47	829.67	59.80	14.874	0		
11,400.00	7,520.00	11,029.25	7,190.00	32.54	31.93	68.08	889.47	828.45	61.02	14.577	0		
11,500.00	7,520.00	11,129.25	7,190.00	33.18	32.58	68.08	889.47	827.22	62.24	14.290	0		
11,600.00	7,520.00	11,229.25	7,190.00	33.82	33.23	68.08	889.47	825.99	63.47	14.013	0		
11,700.00	7,520.00	11,329.25	7,190.00	34.47	33.88	68.08	889.47	824.76	64.70	13.747	0		
11,800.00	7,520.00	11,429.25	7,190.00	35.12	34.54	68.08	889.47	823.52	65.94	13.489	0		
11,900.00	7,520.00	11,529.25	7,190.00	35.77	35.20	68.08	889.47	822.29	67.18	13.240	0		
12,000.00	7,520.00	11,629.25	7,190.00	36.42	35.86	68.08	889.47	821.04	68.42	13.000	0		
12,100.00	7,520.00	11,729.25	7,190.00	37.07	36.52	68.08	889.47	819.80	69.67	12.767	0		
12,200.00	7,520.00	11,829.25	7,190.00	37.73	37.18	68.08	889.47	818.55	70.92	12.542	0		
12,300.00	7,520.00	11,929.25	7,190.00	38.39	37.84	68.08	889.47	817.30	72.17	12.325	0		
12,400.00	7,520.00	12,029.25	7,190.00	39.05	38.51	68.08	889.47	816.04	73.42	12.114	0		
12,500.00	7,520.00	12,129.25	7,190.00	39.71	39.18	68.08	889.47	814.79	74.68	11.910	0		
12,600.00	7,520.00	12,229.25	7,190.00	40.37	39.85	68.08	889.47	813.53	75.94	11.713	0		
12,700.00	7,520.00	12,329.25	7,190.00	41.04	40.51	68.08	889.47	812.27	77.20	11.522	0		
12,800.00	7,520.00	12,429.25	7,190.00	41.70	41.19	68.08	889.47	811.00	78.46	11.336	0		
12,900.00	7,520.00	12,529.25	7,190.00	42.37	41.86	68.08	889.47	809.74	79.73	11.156	0		
13,000.00	7,520.00	12,629.25	7,190.00	43.03	42.53	68.08	889.47	808.47	81.00	10.982	0		
13,100.00	7,520.00	12,729.25	7,190.00	43.70	43.20	68.08	889.47	807.20	82.26	10.812	0		
13,200.00	7,520.00	12,829.25	7,190.00	44.37	43.88	68.08	889.47	805.93	83.54	10.648	0		
13,300.00	7,520.00	12,929.25	7,190.00	45.04	44.55	68.08	889.47	804.66	84.81	10.488	0		
13,400.00	7,520.00	13,029.25	7,190.00	45.72	45.23	68.08	889.47	803.38	86.08	10.333	0		
13,500.00	7,520.00	13,129.25	7,190.00	46.39	45.91	68.08	889.47	802.11	87.36	10.182	0		
13,600.00	7,520.00	13,229.25	7,190.00	47.06	46.59	68.08	889.47	800.83	88.64	10.035	0		
13,700.00	7,520.00	13,329.25	7,190.00	47.74	47.26	68.08	889.47	799.55	89.92	9.892	0		
13,800.00	7,520.00	13,429.25	7,190.00	48.41	47.94	68.08	889.47	798.27	91.20	9.753	0		
13,900.00	7,520.00	13,529.25	7,190.00	49.09	48.62	68.08	889.47	796.99	92.48	9.618	0		
14,000.00	7,520.00	13,629.25	7,190.00	49.76	49.30	68.08	889.47	795.71	93.76	9.487	0		
14,100.00	7,520.00	13,729.25	7,190.00	50.44	49.99	68.08	889.47	794.42	95.04	9.359	0		
14,200.00	7,520.00	13,829.25	7,190.00	51.12	50.67	68.08	889.47	793.14	96.33	9.234	0		
14,300.00	7,520.00	13,929.25	7,190.00	51.80	51.35	68.08	889.47	791.85	97.61	9.112	0		
14,400.00	7,520.00	14,029.25	7,190.00	52.48	52.03	68.08	889.47	790.56	98.90	8.993	0		
14,500.00	7,520.00	14,129.25	7,190.00	53.16	52.72	68.08	889.47	789.28	100.19	8.878	0		
14,600.00	7,520.00	14,229.25	7,190.00	53.84	53.40	68.08	889.47	787.99	101.48	8.765	0		
14,700.00	7,520.00	14,329.25	7,190.00	54.52	54.09	68.08	889.47	786.70	102.77	8.655	0		

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



Schlumberger
Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
14,800.00	7,520.00	14,429.25	7,190.00	55.20	54.77	68.08	889.47	785.41	104.06	8.548	0		
14,900.00	7,520.00	14,529.25	7,190.00	55.89	55.46	68.08	889.47	784.11	105.35	8.443	0		
15,000.00	7,520.00	14,629.25	7,190.00	56.57	56.14	68.08	889.47	782.82	106.65	8.340	0		
15,100.00	7,520.00	14,729.25	7,190.00	57.25	56.83	68.08	889.47	781.53	107.94	8.240	0		
15,200.00	7,520.00	14,829.25	7,190.00	57.94	57.52	68.08	889.47	780.23	109.23	8.143	0		
15,300.00	7,520.00	14,929.25	7,190.00	58.62	58.20	68.08	889.47	778.94	110.53	8.047	0		
15,400.00	7,520.00	15,029.25	7,190.00	59.30	58.89	68.08	889.47	777.64	111.82	7.954	0		
15,500.00	7,520.00	15,129.25	7,190.00	59.99	59.58	68.08	889.47	776.34	113.12	7.863	0		
15,600.00	7,520.00	15,229.25	7,190.00	60.68	60.27	68.08	889.47	775.05	114.42	7.774	0		
15,700.00	7,520.00	15,329.25	7,190.00	61.36	60.96	68.08	889.47	773.75	115.72	7.687	0		
15,800.00	7,520.00	15,429.25	7,190.00	62.05	61.65	68.08	889.47	772.45	117.01	7.601	0		
15,900.00	7,520.00	15,529.25	7,190.00	62.74	62.34	68.08	889.47	771.15	118.31	7.518	0		
16,000.00	7,520.00	15,629.25	7,190.00	63.42	63.03	68.08	889.47	769.85	119.61	7.436	0		
16,100.00	7,520.00	15,729.25	7,190.00	64.11	63.72	68.08	889.47	768.55	120.91	7.356	0		
16,200.00	7,520.00	15,829.25	7,190.00	64.80	64.41	68.08	889.47	767.25	122.22	7.278	0		
16,300.00	7,520.00	15,929.25	7,190.00	65.49	65.10	68.08	889.47	765.95	123.52	7.201	0		
16,400.00	7,520.00	16,029.25	7,190.00	66.18	65.79	68.08	889.47	764.65	124.82	7.126	0		
16,500.00	7,520.00	16,129.25	7,190.00	66.86	66.48	68.08	889.47	763.34	126.12	7.052	0		
16,600.00	7,520.00	16,229.25	7,190.00	67.55	67.17	68.08	889.47	762.04	127.42	6.980	0		
16,700.00	7,520.00	16,329.25	7,190.00	68.24	67.86	68.08	889.47	760.74	128.73	6.910	0		
16,800.00	7,520.00	16,429.25	7,190.00	68.93	68.55	68.08	889.47	759.43	130.03	6.840	0		
16,900.00	7,520.00	16,529.25	7,190.00	69.62	69.25	68.08	889.47	758.13	131.34	6.772	0		
17,000.00	7,520.00	16,629.25	7,190.00	70.31	69.94	68.08	889.47	756.82	132.64	6.706	0		
17,100.00	7,520.00	16,729.25	7,190.00	71.00	70.63	68.08	889.47	755.52	133.95	6.640	0		
17,200.00	7,520.00	16,829.25	7,190.00	71.69	71.32	68.08	889.47	754.21	135.25	6.576	0		
17,300.00	7,520.00	16,929.25	7,190.00	72.39	72.02	68.08	889.47	752.91	136.56	6.513	0		
17,400.00	7,520.00	17,029.25	7,190.00	73.08	72.71	68.08	889.47	751.60	137.86	6.452	0		
17,500.00	7,520.00	17,129.25	7,190.00	73.77	73.40	68.08	889.47	750.29	139.17	6.391	0		
17,582.23	7,520.00	17,213.25	7,190.00	74.34	73.99	68.08	889.44	749.18	140.26	6.341	0	SF	



Schlumberger

Anticollision Risk Report



Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder												Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor		
0.00	0.00	2.00	2.00	0.00	0.00	-179.99	140.27				0	CC, ES	
100.00	100.00	102.00	102.00	0.15	0.15	-179.99	140.27	139.97	0.30	472.741	0		
200.00	200.00	202.00	202.00	0.32	0.32	-179.99	140.27	139.62	0.65	217.205	0		
300.00	300.00	302.00	302.00	0.50	0.50	-179.99	140.27	139.27	0.99	140.993	0		
400.00	400.00	402.00	402.00	0.67	0.67	-179.99	140.27	138.92	1.34	104.371	0		
500.00	500.00	502.00	502.00	0.84	0.85	-179.99	140.27	138.57	1.69	82.852	0		
600.00	600.00	602.00	602.00	1.02	1.02	-179.99	140.27	138.22	2.04	68.689	0		
700.00	700.00	702.00	702.00	1.19	1.20	-179.99	140.27	137.87	2.39	58.661	0		
800.00	799.98	801.98	801.98	1.37	1.37	-147.07	141.73	138.99	2.74	51.733	0		
900.00	899.84	901.84	901.84	1.54	1.55	-148.14	146.15	143.06	3.09	47.346	0		
1,000.00	999.45	1,001.42	1,001.42	1.72	1.72	-149.78	153.62	150.19	3.43	44.755	0		
1,100.00	1,098.70	1,098.64	1,098.62	1.90	1.89	-151.21	164.91	161.14	3.77	43.709	0		
1,161.05	1,159.06	1,157.72	1,157.64	2.01	1.99	-151.73	173.94	169.96	3.98	43.713	0		
1,200.00	1,197.51	1,195.32	1,195.17	2.08	2.06	-151.95	180.31	176.19	4.11	43.822	0		
1,300.00	1,296.22	1,291.59	1,291.08	2.27	2.23	-151.84	197.46	193.00	4.46	44.261	0		
1,400.00	1,394.92	1,389.33	1,388.24	2.45	2.40	-151.14	215.48	210.67	4.81	44.777	0		
1,500.00	1,493.63	1,487.65	1,485.97	2.64	2.58	-150.53	233.56	228.39	5.17	45.215	0		
1,600.00	1,592.34	1,585.97	1,583.70	2.83	2.75	-150.00	251.66	246.14	5.52	45.592	0		
1,700.00	1,691.05	1,684.30	1,681.43	3.02	2.93	-149.55	269.78	263.90	5.87	45.921	0		
1,800.00	1,789.76	1,782.62	1,779.15	3.21	3.11	-149.15	287.91	281.68	6.23	46.208	0		
1,900.00	1,888.46	1,880.94	1,876.88	3.40	3.29	-148.80	306.06	299.47	6.59	46.458	0		
2,000.00	1,987.17	1,979.27	1,974.61	3.59	3.46	-148.49	324.21	317.27	6.95	46.680	0		
2,100.00	2,085.88	2,077.59	2,072.34	3.78	3.64	-148.21	342.38	335.07	7.30	46.879	0		
2,200.00	2,184.59	2,175.92	2,170.07	3.97	3.82	-147.96	360.55	352.89	7.66	47.058	0		
2,300.00	2,283.29	2,274.24	2,267.80	4.16	4.00	-147.73	378.72	370.70	8.02	47.220	0		
2,400.00	2,382.00	2,372.56	2,365.52	4.35	4.18	-147.53	396.91	388.53	8.38	47.367	0		
2,500.00	2,480.71	2,470.89	2,463.25	4.54	4.36	-147.34	415.09	406.35	8.74	47.502	0		
2,600.00	2,579.42	2,569.21	2,560.98	4.74	4.54	-147.17	433.28	424.18	9.10	47.625	0		
2,700.00	2,678.13	2,667.53	2,658.71	4.93	4.71	-147.01	451.48	442.02	9.46	47.738	0		
2,800.00	2,776.83	2,765.86	2,756.44	5.12	4.89	-146.87	469.67	459.86	9.82	47.843	0		
2,900.00	2,875.54	2,864.18	2,854.17	5.31	5.07	-146.73	487.87	477.70	10.18	47.939	0		
3,000.00	2,974.25	2,962.51	2,951.89	5.50	5.25	-146.61	506.07	495.54	10.54	48.029	0		
3,100.00	3,072.96	3,060.83	3,049.62	5.70	5.43	-146.49	524.28	513.38	10.90	48.113	0		
3,200.00	3,171.66	3,159.15	3,147.35	5.89	5.61	-146.38	542.48	531.23	11.26	48.190	0		
3,300.00	3,270.37	3,257.48	3,245.08	6.08	5.79	-146.28	560.69	549.07	11.62	48.263	0		
3,400.00	3,369.08	3,355.80	3,342.81	6.27	5.97	-146.19	578.90	566.92	11.98	48.331	0		
3,500.00	3,467.79	3,454.12	3,440.54	6.47	6.15	-146.10	597.11	584.77	12.34	48.395	0		
3,600.00	3,566.50	3,552.45	3,538.26	6.66	6.33	-146.01	615.32	602.63	12.70	48.455	0		
3,700.00	3,665.20	3,650.77	3,635.99	6.85	6.51	-145.93	633.54	620.48	13.06	48.512	0		
3,800.00	3,763.91	3,749.10	3,733.72	7.05	6.69	-145.86	651.75	638.33	13.42	48.565	0		
3,900.00	3,862.62	3,847.42	3,831.45	7.24	6.87	-145.79	669.97	656.19	13.78	48.616	0		
4,000.00	3,961.33	3,945.74	3,929.18	7.43	7.05	-145.72	688.18	674.04	14.14	48.664	0		
4,100.00	4,060.03	4,044.07	4,026.91	7.62	7.23	-145.66	706.40	691.90	14.50	48.709	0		
4,200.00	4,158.74	4,142.39	4,124.63	7.82	7.41	-145.60	724.62	709.76	14.86	48.752	0		
4,300.00	4,257.45	4,240.71	4,222.36	8.01	7.59	-145.54	742.84	727.61	15.22	48.793	0		
4,400.00	4,356.16	4,339.04	4,320.09	8.20	7.77	-145.48	761.06	745.47	15.59	48.832	0		
4,500.00	4,454.87	4,437.36	4,417.82	8.40	7.95	-145.43	779.28	763.33	15.95	48.869	0		
4,600.00	4,553.57	4,535.69	4,515.55	8.59	8.13	-145.38	797.50	781.19	16.31	48.905	0		
4,700.00	4,652.28	4,634.01	4,613.28	8.78	8.31	-145.33	815.72	799.05	16.67	48.939	0		
4,800.00	4,750.99	4,732.33	4,711.00	8.98	8.49	-145.29	833.94	816.91	17.03	48.971	0		
4,900.00	4,849.70	4,830.66	4,808.73	9.17	8.67	-145.25	852.16	834.77	17.39	49.002	0		
5,000.00	4,948.40	4,928.98	4,906.46	9.36	8.85	-145.20	870.39	852.63	17.75	49.031	0		
5,100.00	5,047.11	5,027.30	5,004.19	9.56	9.03	-145.16	888.61	870.50	18.11	49.060	0		
5,200.00	5,145.82	5,125.63	5,101.92	9.75	9.21	-145.13	906.83	888.36	18.47	49.087	0		

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



Schlumberger

Anticollision Risk Report



Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 8 - Original Hole - Rev 0		Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder													Offset Well Error: 0.00 usft			
Reference		Offset		Semi Major Axis			Distance						Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision				
5,300.00	5,244.53	5,223.95	5,199.65	9.94	9.39	-145.09	925.06	906.22	18.84	49.113	0					
5,400.00	5,343.24	5,322.28	5,297.37	10.14	9.58	-145.05	943.28	924.08	19.20	49.138	0					
5,500.00	5,441.94	5,420.60	5,395.10	10.33	9.76	-145.02	961.51	941.95	19.56	49.163	0					
5,600.00	5,540.65	5,518.92	5,492.83	10.52	9.94	-144.99	979.73	959.81	19.92	49.186	0					
5,700.00	5,639.36	5,617.25	5,590.56	10.72	10.12	-144.96	997.96	977.68	20.28	49.208	0					
5,800.00	5,738.07	5,715.57	5,688.29	10.91	10.30	-144.92	1,016.18	995.54	20.64	49.230	0					
5,900.00	5,836.77	5,813.89	5,786.01	11.10	10.48	-144.90	1,034.41	1,013.40	21.00	49.251	0					
6,000.00	5,935.48	5,912.22	5,883.74	11.30	10.66	-144.87	1,052.63	1,031.27	21.36	49.271	0					
6,100.00	6,034.19	6,010.54	5,981.47	11.49	10.84	-144.84	1,070.86	1,049.13	21.73	49.290	0					
6,200.00	6,132.90	6,108.86	6,079.20	11.68	11.02	-144.81	1,089.09	1,067.00	22.09	49.309	0					
6,300.00	6,231.61	6,215.66	6,185.38	11.88	11.21	-144.80	1,107.17	1,084.70	22.46	49.290	0					
6,393.93	6,324.32	6,328.70	6,298.11	12.06	11.41	-144.96	1,122.73	1,099.90	22.83	49.176	0					
6,400.00	6,330.31	6,336.02	6,305.42	12.07	11.42	-144.99	1,123.67	1,100.82	22.86	49.161	0					
6,500.00	6,429.31	6,457.06	6,426.39	12.26	11.63	-145.47	1,136.69	1,113.41	23.28	48.836	0					
6,600.00	6,528.74	6,561.40	6,530.74	12.44	11.81	-145.88	1,145.53	1,121.88	23.65	48.438	0					
6,700.00	6,628.48	6,662.05	6,631.19	12.61	11.97	-146.38	1,151.43	1,127.44	23.99	47.994	0					
6,800.00	6,728.41	6,758.94	6,726.08	12.77	12.11	-147.46	1,154.58	1,130.30	24.29	47.537	0					
6,854.98	6,783.38	6,809.20	6,773.87	12.86	12.17	178.45	1,155.39	1,130.77	24.62	46.928	0					
6,900.00	6,828.40	6,850.00	6,811.67	12.93	12.23	177.69	1,156.00	1,131.23	24.77	46.672	0					
6,954.98	6,883.38	6,893.48	6,850.77	13.02	12.28	176.75	1,157.29	1,132.35	24.94	46.404	0					
7,000.00	6,928.37	6,928.76	6,881.50	13.09	12.32	85.82	1,158.80	1,134.00	24.80	46.730	0					
7,050.00	6,978.05	6,967.14	6,913.77	13.17	12.37	84.79	1,160.84	1,135.93	24.91	46.608	0					
7,100.00	7,027.15	7,004.76	6,944.13	13.24	12.41	83.79	1,163.19	1,138.18	25.01	46.515	0					
7,150.00	7,075.37	7,041.71	6,972.63	13.30	12.46	82.81	1,165.81	1,140.71	25.10	46.446	0					
7,200.00	7,122.40	7,078.08	6,999.30	13.37	12.50	81.86	1,168.64	1,143.46	25.19	46.399	0					
7,250.00	7,167.96	7,113.93	7,024.17	13.43	12.55	80.95	1,171.62	1,146.35	25.27	46.371	0					
7,300.00	7,211.76	7,150.00	7,047.68	13.49	12.59	80.07	1,174.69	1,149.35	25.34	46.357	0					
7,350.00	7,253.54	7,184.30	7,068.57	13.55	12.64	79.26	1,177.80	1,152.39	25.41	46.356	0					
7,400.00	7,293.04	7,218.93	7,088.14	13.61	12.69	78.48	1,180.89	1,155.42	25.47	46.360	0					
7,450.00	7,330.01	7,250.00	7,104.35	13.67	12.73	77.79	1,183.92	1,158.39	25.53	46.372	0					
7,500.00	7,364.22	7,287.27	7,122.07	13.73	12.79	77.08	1,186.82	1,161.22	25.60	46.364	0					
7,550.00	7,395.48	7,321.06	7,136.45	13.79	12.84	76.47	1,189.56	1,163.90	25.66	46.350	0					
7,600.00	7,423.57	7,350.00	7,147.46	13.86	12.88	75.96	1,192.12	1,166.38	25.73	46.330	0					
7,650.00	7,448.34	7,388.05	7,160.07	13.93	12.95	75.43	1,194.41	1,168.58	25.82	46.256	0					
7,700.00	7,469.62	7,421.30	7,169.31	14.01	13.02	75.01	1,196.44	1,170.52	25.92	46.162	0					
7,750.00	7,487.29	7,450.00	7,175.94	14.09	13.09	74.68	1,198.18	1,172.16	26.02	46.044	0					
7,800.00	7,501.23	7,487.46	7,182.69	14.18	13.18	74.38	1,199.57	1,173.41	26.16	45.849	0					
7,850.00	7,511.36	7,520.41	7,186.82	14.28	13.26	74.17	1,200.64	1,174.32	26.32	45.621	0					
7,900.00	7,517.63	7,550.00	7,189.09	14.38	13.34	74.04	1,201.35	1,174.87	26.49	45.359	0					
7,954.98	7,520.00	7,592.27	7,190.00	14.51	13.45	73.96	1,201.69	1,174.96	26.72	44.969	0					
8,000.00	7,520.00	7,637.30	7,190.00	14.63	13.58	73.96	1,201.69	1,174.71	26.97	44.549	0					
8,100.00	7,520.00	7,737.30	7,190.00	14.90	13.89	73.96	1,201.69	1,174.12	27.57	43.590	0					
8,200.00	7,520.00	7,837.30	7,190.00	15.22	14.22	73.96	1,201.69	1,173.47	28.22	42.590	0					
8,300.00	7,520.00	7,937.30	7,190.00	15.56	14.58	73.96	1,201.69	1,172.78	28.91	41.564	0					
8,400.00	7,520.00	8,037.29	7,190.00	15.92	14.96	73.96	1,201.69	1,172.03	29.65	40.522	0					
8,500.00	7,520.00	8,137.29	7,190.00	16.31	15.37	73.96	1,201.69	1,171.25	30.44	39.476	0					
8,600.00	7,520.00	8,237.29	7,190.00	16.72	15.79	73.96	1,201.69	1,170.42	31.27	38.433	0					
8,700.00	7,520.00	8,337.29	7,190.00	17.15	16.24	73.96	1,201.69	1,169.56	32.13	37.402	0					
8,800.00	7,520.00	8,437.29	7,190.00	17.59	16.70	73.96	1,201.69	1,168.66	33.03	36.387	0					
8,900.00	7,520.00	8,537.29	7,190.00	18.05	17.18	73.96	1,201.69	1,167.74	33.95	35.393	0					
9,000.00	7,520.00	8,637.29	7,190.00	18.53	17.67	73.96	1,201.69	1,166.78	34.91	34.424	0					
9,100.00	7,520.00	8,737.29	7,190.00	19.02	18.18	73.96	1,201.69	1,165.80	35.89	33.481	0					
9,200.00	7,520.00	8,837.29	7,190.00	19.53	18.70	73.96	1,201.69	1,164.79	36.90	32.568	0					
9,300.00	7,520.00	8,937.29	7,190.00	20.04	19.23	73.96	1,201.69	1,163.77	37.93	31.685	0					

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



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
9,400.00	7,520.00	9,037.29	7,190.00	20.57	19.77	73.96	1,201.69	1,162.72	38.98	30.831	0			
9,500.00	7,520.00	9,137.29	7,190.00	21.11	20.32	73.96	1,201.69	1,161.65	40.04	30.009	0			
9,600.00	7,520.00	9,237.29	7,190.00	21.65	20.88	73.96	1,201.70	1,160.57	41.13	29.217	0			
9,700.00	7,520.00	9,337.29	7,190.00	22.21	21.45	73.96	1,201.70	1,159.46	42.23	28.454	0			
9,800.00	7,520.00	9,437.29	7,190.00	22.77	22.03	73.96	1,201.70	1,158.35	43.35	27.721	0			
9,900.00	7,520.00	9,537.28	7,190.00	23.34	22.62	73.96	1,201.70	1,157.22	44.48	27.017	0			
10,000.00	7,520.00	9,637.28	7,190.00	23.92	23.21	73.96	1,201.70	1,156.08	45.62	26.340	0			
10,100.00	7,520.00	9,737.28	7,190.00	24.51	23.80	73.96	1,201.70	1,154.92	46.78	25.689	0			
10,200.00	7,520.00	9,837.28	7,190.00	25.10	24.41	73.96	1,201.70	1,153.76	47.94	25.065	0			
10,300.00	7,520.00	9,937.28	7,190.00	25.69	25.01	73.96	1,201.70	1,152.58	49.12	24.464	0			
10,400.00	7,520.00	10,037.28	7,190.00	26.29	25.63	73.96	1,201.70	1,151.40	50.31	23.888	0			
10,500.00	7,520.00	10,137.28	7,190.00	26.90	26.25	73.96	1,201.71	1,150.21	51.50	23.334	0			
10,600.00	7,520.00	10,237.28	7,190.00	27.51	26.87	73.96	1,201.71	1,149.00	52.70	22.801	0			
10,700.00	7,520.00	10,337.28	7,190.00	28.13	27.49	73.96	1,201.71	1,147.80	53.91	22.290	0			
10,800.00	7,520.00	10,437.28	7,190.00	28.75	28.12	73.96	1,201.71	1,146.58	55.13	21.797	0			
10,900.00	7,520.00	10,537.28	7,190.00	29.37	28.76	73.96	1,201.71	1,145.36	56.36	21.324	0			
11,000.00	7,520.00	10,637.28	7,190.00	30.00	29.39	73.96	1,201.71	1,144.13	57.59	20.868	0			
11,100.00	7,520.00	10,737.28	7,190.00	30.63	30.03	73.96	1,201.72	1,142.89	58.82	20.430	0			
11,200.00	7,520.00	10,837.28	7,190.00	31.26	30.67	73.96	1,201.72	1,141.65	60.06	20.007	0			
11,300.00	7,520.00	10,937.28	7,190.00	31.90	31.32	73.96	1,201.72	1,140.41	61.31	19.600	0			
11,400.00	7,520.00	11,037.27	7,190.00	32.54	31.96	73.96	1,201.72	1,139.16	62.56	19.208	0			
11,500.00	7,520.00	11,137.27	7,190.00	33.18	32.61	73.96	1,201.72	1,137.90	63.82	18.830	0			
11,600.00	7,520.00	11,237.27	7,190.00	33.82	33.26	73.96	1,201.73	1,136.65	65.08	18.465	0			
11,700.00	7,520.00	11,337.27	7,190.00	34.47	33.92	73.96	1,201.73	1,135.38	66.34	18.113	0			
11,800.00	7,520.00	11,437.27	7,190.00	35.12	34.57	73.96	1,201.73	1,134.12	67.61	17.774	0			
11,900.00	7,520.00	11,537.27	7,190.00	35.77	35.23	73.96	1,201.73	1,132.85	68.89	17.445	0			
12,000.00	7,520.00	11,637.27	7,190.00	36.42	35.89	73.96	1,201.73	1,131.57	70.16	17.128	0			
12,100.00	7,520.00	11,737.27	7,190.00	37.07	36.55	73.96	1,201.74	1,130.30	71.44	16.822	0			
12,200.00	7,520.00	11,837.27	7,190.00	37.73	37.21	73.96	1,201.74	1,129.02	72.72	16.525	0			
12,300.00	7,520.00	11,937.27	7,190.00	38.39	37.88	73.96	1,201.74	1,127.73	74.01	16.238	0			
12,400.00	7,520.00	12,037.27	7,190.00	39.05	38.54	73.96	1,201.74	1,126.45	75.29	15.961	0			
12,500.00	7,520.00	12,137.27	7,190.00	39.71	39.21	73.96	1,201.75	1,125.16	76.59	15.692	0			
12,600.00	7,520.00	12,237.27	7,190.00	40.37	39.88	73.96	1,201.75	1,123.87	77.88	15.431	0			
12,700.00	7,520.00	12,337.27	7,190.00	41.04	40.55	73.96	1,201.75	1,122.58	79.17	15.179	0			
12,800.00	7,520.00	12,437.26	7,190.00	41.70	41.22	73.96	1,201.76	1,121.28	80.47	14.934	0			
12,900.00	7,520.00	12,537.26	7,190.00	42.37	41.89	73.96	1,201.76	1,119.99	81.77	14.697	0			
13,000.00	7,520.00	12,637.26	7,190.00	43.03	42.56	73.96	1,201.76	1,118.69	83.07	14.467	0			
13,100.00	7,520.00	12,737.26	7,190.00	43.70	43.23	73.96	1,201.76	1,117.39	84.38	14.243	0			
13,200.00	7,520.00	12,837.26	7,190.00	44.37	43.91	73.96	1,201.77	1,116.09	85.68	14.026	0			
13,300.00	7,520.00	12,937.26	7,190.00	45.04	44.58	73.96	1,201.77	1,114.78	86.99	13.815	0			
13,400.00	7,520.00	13,037.26	7,190.00	45.72	45.26	73.96	1,201.77	1,113.48	88.30	13.611	0			
13,500.00	7,520.00	13,137.26	7,190.00	46.39	45.94	73.96	1,201.78	1,112.17	89.61	13.412	0			
13,600.00	7,520.00	13,237.26	7,190.00	47.06	46.61	73.96	1,201.78	1,110.86	90.92	13.218	0			
13,700.00	7,520.00	13,337.26	7,190.00	47.74	47.29	73.96	1,201.78	1,109.55	92.23	13.030	0			
13,800.00	7,520.00	13,437.26	7,190.00	48.41	47.97	73.96	1,201.79	1,108.24	93.55	12.847	0			
13,900.00	7,520.00	13,537.26	7,190.00	49.09	48.65	73.96	1,201.79	1,106.92	94.86	12.668	0			
14,000.00	7,520.00	13,637.26	7,190.00	49.76	49.33	73.96	1,201.79	1,105.61	96.18	12.495	0			
14,100.00	7,520.00	13,737.26	7,190.00	50.44	50.01	73.96	1,201.80	1,104.29	97.50	12.326	0			
14,200.00	7,520.00	13,837.26	7,190.00	51.12	50.70	73.96	1,201.80	1,102.98	98.82	12.161	0			
14,300.00	7,520.00	13,937.25	7,190.00	51.80	51.38	73.96	1,201.80	1,101.66	100.14	12.001	0			
14,400.00	7,520.00	14,037.25	7,190.00	52.48	52.06	73.96	1,201.81	1,100.34	101.47	11.844	0			
14,500.00	7,520.00	14,137.25	7,190.00	53.16	52.74	73.96	1,201.81	1,099.02	102.79	11.692	0			
14,600.00	7,520.00	14,237.25	7,190.00	53.84	53.43	73.96	1,201.81	1,097.70	104.11	11.543	0			
14,700.00	7,520.00	14,337.25	7,190.00	54.52	54.11	73.96	1,201.82	1,096.38	105.44	11.398	0			

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



Schlumberger
Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 8 - Original Hole - Rev 0		Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:	0.00 usft		
Reference		Offset		Semi Major Axis		Distance							Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision				
14,800.00	7,520.00	14,437.25	7,190.00	55.20	54.80	73.96	1,201.82	1,095.06	106.77	11.257	0					
14,900.00	7,520.00	14,537.25	7,190.00	55.89	55.48	73.96	1,201.83	1,093.73	108.09	11.118	0					
15,000.00	7,520.00	14,637.25	7,190.00	56.57	56.17	73.96	1,201.83	1,092.41	109.42	10.983	0					
15,100.00	7,520.00	14,737.25	7,190.00	57.25	56.86	73.96	1,201.83	1,091.08	110.75	10.852	0					
15,200.00	7,520.00	14,837.25	7,190.00	57.94	57.54	73.96	1,201.84	1,089.76	112.08	10.723	0					
15,300.00	7,520.00	14,937.25	7,190.00	58.62	58.23	73.96	1,201.84	1,088.43	113.41	10.597	0					
15,400.00	7,520.00	15,037.25	7,190.00	59.30	58.92	73.96	1,201.85	1,087.10	114.74	10.474	0					
15,500.00	7,520.00	15,137.25	7,190.00	59.99	59.61	73.96	1,201.85	1,085.78	116.08	10.354	0					
15,600.00	7,520.00	15,237.25	7,190.00	60.68	60.29	73.96	1,201.86	1,084.45	117.41	10.237	0					
15,700.00	7,520.00	15,337.24	7,190.00	61.36	60.98	73.96	1,201.86	1,083.12	118.74	10.122	0					
15,800.00	7,520.00	15,437.24	7,190.00	62.05	61.67	73.96	1,201.86	1,081.79	120.08	10.009	0					
15,900.00	7,520.00	15,537.24	7,190.00	62.74	62.36	73.96	1,201.87	1,080.46	121.41	9.899	0					
16,000.00	7,520.00	15,637.24	7,190.00	63.42	63.05	73.96	1,201.87	1,079.13	122.75	9.791	0					
16,100.00	7,520.00	15,737.24	7,190.00	64.11	63.74	73.96	1,201.88	1,077.79	124.08	9.686	0					
16,200.00	7,520.00	15,837.24	7,190.00	64.80	64.43	73.96	1,201.88	1,076.46	125.42	9.583	0					
16,300.00	7,520.00	15,937.24	7,190.00	65.49	65.12	73.96	1,201.89	1,075.13	126.76	9.482	0					
16,400.00	7,520.00	16,037.24	7,190.00	66.18	65.81	73.96	1,201.89	1,073.80	128.10	9.383	0					
16,500.00	7,520.00	16,137.24	7,190.00	66.86	66.50	73.96	1,201.90	1,072.46	129.43	9.286	0					
16,600.00	7,520.00	16,237.24	7,190.00	67.55	67.19	73.96	1,201.90	1,071.13	130.77	9.191	0					
16,700.00	7,520.00	16,337.24	7,190.00	68.24	67.89	73.96	1,201.91	1,069.79	132.11	9.098	0					
16,800.00	7,520.00	16,437.24	7,190.00	68.93	68.58	73.96	1,201.91	1,068.46	133.45	9.006	0					
16,900.00	7,520.00	16,537.24	7,190.00	69.62	69.27	73.96	1,201.92	1,067.12	134.79	8.917	0					
17,000.00	7,520.00	16,637.24	7,190.00	70.31	69.96	73.97	1,201.92	1,065.79	136.13	8.829	0					
17,100.00	7,520.00	16,737.24	7,190.00	71.00	70.65	73.97	1,201.93	1,064.45	137.48	8.743	0					
17,200.00	7,520.00	16,837.23	7,190.00	71.69	71.35	73.97	1,201.93	1,063.12	138.82	8.658	0					
17,300.00	7,520.00	16,937.23	7,190.00	72.39	72.04	73.97	1,201.94	1,061.78	140.16	8.575	0					
17,400.00	7,520.00	17,037.23	7,190.00	73.08	72.73	73.97	1,201.94	1,060.44	141.50	8.494	0					
17,500.00	7,520.00	17,137.23	7,190.00	73.77	73.43	73.97	1,201.95	1,059.10	142.85	8.414	0					
17,564.76	7,520.00	17,201.99	7,190.00	74.22	73.88	73.97	1,201.95	1,058.22	143.73	8.363	0					
17,582.23	7,520.00	17,219.47	7,190.00	74.34	74.00	73.97	1,201.95	1,058.00	143.95	8.350	0	SF				



Schlumberger

Anticollision Risk Report



Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision		
0.00	0.00	3.00	3.00	0.00	0.00	-179.97	167.95						0	
100.00	100.00	103.00	103.00	0.15	0.15	-179.97	167.95	167.66	0.30	562.752	0		0	
200.00	200.00	203.00	203.00	0.32	0.33	-179.97	167.95	167.31	0.65	259.382	0		0	
300.00	300.00	303.00	303.00	0.50	0.50	-179.97	167.95	166.96	1.00	168.530	0		0	
400.00	400.00	403.00	403.00	0.67	0.68	-179.97	167.95	166.61	1.35	124.813	0		0	
500.00	500.00	503.00	503.00	0.84	0.85	-179.97	167.95	166.26	1.69	99.105	0		0	
600.00	600.00	603.00	603.00	1.02	1.02	-179.97	167.95	165.91	2.04	82.178	0		0	
700.00	700.00	703.00	703.00	1.19	1.20	-179.97	167.95	165.56	2.39	70.190	0		0	CC, ES
800.00	799.98	802.98	802.98	1.37	1.37	-146.99	169.42	166.67	2.74	61.800	0		0	
900.00	899.84	902.74	902.74	1.54	1.55	-147.88	173.83	170.74	3.09	56.284	0		0	
1,000.00	999.45	1,000.00	999.98	1.72	1.72	-148.77	182.29	178.86	3.43	53.144	0		0	
1,100.00	1,098.70	1,094.34	1,094.20	1.90	1.88	-149.23	195.65	191.89	3.77	51.960	0		0	
1,161.05	1,159.06	1,152.18	1,151.86	2.01	1.98	-149.33	206.20	202.23	3.97	51.939	0		0	
1,200.00	1,197.51	1,188.90	1,188.41	2.08	2.05	-149.37	213.63	209.53	4.10	52.056	0		0	
1,300.00	1,296.22	1,285.12	1,284.03	2.27	2.22	-149.10	233.68	229.23	4.45	52.493	0		0	
1,400.00	1,394.92	1,383.05	1,381.31	2.45	2.40	-148.82	253.91	249.11	4.80	52.857	0		0	
1,500.00	1,493.63	1,480.97	1,478.59	2.64	2.57	-148.59	274.15	268.99	5.16	53.162	0		0	
1,600.00	1,592.34	1,578.90	1,575.86	2.83	2.75	-148.38	294.38	288.87	5.51	53.420	0		0	
1,700.00	1,691.05	1,676.83	1,673.14	3.02	2.93	-148.20	314.63	308.76	5.87	53.641	0		0	
1,800.00	1,789.76	1,774.75	1,770.42	3.21	3.10	-148.04	334.87	328.65	6.22	53.833	0		0	
1,900.00	1,888.46	1,872.68	1,867.70	3.40	3.28	-147.90	355.12	348.54	6.58	54.000	0		0	
2,000.00	1,987.17	1,970.60	1,964.98	3.59	3.46	-147.78	375.37	368.43	6.93	54.147	0		0	
2,100.00	2,085.88	2,068.53	2,062.26	3.78	3.64	-147.67	395.61	388.33	7.29	54.277	0		0	
2,200.00	2,184.59	2,166.45	2,159.53	3.97	3.82	-147.56	415.87	408.22	7.65	54.393	0		0	
2,300.00	2,283.29	2,264.38	2,256.81	4.16	4.00	-147.47	436.12	428.12	8.00	54.497	0		0	
2,400.00	2,382.00	2,362.30	2,354.09	4.35	4.17	-147.39	456.37	448.01	8.36	54.591	0		0	
2,500.00	2,480.71	2,460.23	2,451.37	4.54	4.35	-147.31	476.62	467.91	8.72	54.676	0		0	
2,600.00	2,579.42	2,558.16	2,548.65	4.74	4.53	-147.24	496.88	487.80	9.07	54.753	0		0	
2,700.00	2,678.13	2,656.08	2,645.92	4.93	4.71	-147.18	517.13	507.70	9.43	54.824	0		0	
2,800.00	2,776.83	2,754.01	2,743.20	5.12	4.89	-147.12	537.39	527.60	9.79	54.889	0		0	
2,900.00	2,875.54	2,851.93	2,840.48	5.31	5.07	-147.06	557.65	547.50	10.15	54.948	0		0	
3,000.00	2,974.25	2,949.86	2,937.76	5.50	5.25	-147.01	577.90	567.40	10.51	55.003	0		0	
3,100.00	3,072.96	3,047.78	3,035.04	5.70	5.43	-146.96	598.16	587.30	10.87	55.054	0		0	
3,200.00	3,171.66	3,145.71	3,132.31	5.89	5.61	-146.92	618.42	607.20	11.22	55.101	0		0	
3,300.00	3,270.37	3,243.63	3,229.59	6.08	5.79	-146.88	638.68	627.10	11.58	55.145	0		0	
3,400.00	3,369.08	3,341.56	3,326.87	6.27	5.97	-146.84	658.94	647.00	11.94	55.186	0		0	
3,500.00	3,467.79	3,439.49	3,424.15	6.47	6.15	-146.80	679.19	666.90	12.30	55.224	0		0	
3,600.00	3,566.50	3,537.41	3,521.43	6.66	6.33	-146.76	699.45	686.80	12.66	55.260	0		0	
3,700.00	3,665.20	3,635.34	3,618.71	6.85	6.51	-146.73	719.71	706.70	13.02	55.294	0		0	
3,800.00	3,763.91	3,733.26	3,715.98	7.05	6.69	-146.70	739.97	726.60	13.37	55.325	0		0	
3,900.00	3,862.62	3,831.19	3,813.26	7.24	6.87	-146.67	760.23	746.50	13.73	55.355	0		0	
4,000.00	3,961.33	3,929.11	3,910.54	7.43	7.05	-146.64	780.49	766.40	14.09	55.383	0		0	
4,100.00	4,060.03	4,027.04	4,007.82	7.62	7.23	-146.61	800.75	786.30	14.45	55.410	0		0	
4,200.00	4,158.74	4,124.96	4,105.10	7.82	7.41	-146.59	821.01	806.20	14.81	55.435	0		0	
4,300.00	4,257.45	4,222.89	4,202.37	8.01	7.59	-146.57	841.27	826.10	15.17	55.459	0		0	
4,400.00	4,356.16	4,320.82	4,299.65	8.20	7.77	-146.54	861.53	846.00	15.53	55.481	0		0	
4,500.00	4,454.87	4,418.74	4,396.93	8.40	7.95	-146.52	881.79	865.90	15.89	55.503	0		0	
4,600.00	4,553.57	4,516.67	4,494.21	8.59	8.13	-146.50	902.05	885.81	16.25	55.523	0		0	
4,700.00	4,652.28	4,614.59	4,591.49	8.78	8.31	-146.48	922.31	905.71	16.61	55.543	0		0	
4,800.00	4,750.99	4,712.52	4,688.76	8.98	8.49	-146.46	942.57	925.61	16.96	55.561	0		0	
4,900.00	4,849.70	4,810.44	4,786.04	9.17	8.67	-146.44	962.83	945.51	17.32	55.579	0		0	
5,000.00	4,948.40	4,908.37	4,883.32	9.36	8.85	-146.42	983.10	965.41	17.68	55.596	0		0	
5,100.00	5,047.11	5,006.29	4,980.60	9.56	9.04	-146.41	1,003.36	985.31	18.04	55.612	0		0	
5,200.00	5,145.82	5,104.22	5,077.88	9.75	9.22	-146.39	1,023.62	1,005.22	18.40	55.628	0		0	

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



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error: 0.00 usft	
Survey Program: 0-Pathfinder												Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision	
5,300.00	5,244.53	5,202.14	5,175.16	9.94	9.40	-146.38	1,043.88	1,025.12	18.76	55.643	0		
5,400.00	5,343.24	5,300.07	5,272.43	10.14	9.58	-146.36	1,064.14	1,045.02	19.12	55.657	0		
5,500.00	5,441.94	5,398.00	5,369.71	10.33	9.76	-146.35	1,084.40	1,064.92	19.48	55.671	0		
5,600.00	5,540.65	5,495.92	5,466.99	10.52	9.94	-146.33	1,104.66	1,084.83	19.84	55.684	0		
5,700.00	5,639.36	5,593.85	5,564.27	10.72	10.12	-146.32	1,124.92	1,104.73	20.20	55.696	0		
5,800.00	5,738.07	5,691.77	5,661.55	10.91	10.30	-146.31	1,145.19	1,124.63	20.56	55.709	0		
5,900.00	5,836.77	5,789.70	5,758.82	11.10	10.48	-146.29	1,165.45	1,144.53	20.92	55.720	0		
6,000.00	5,935.48	5,887.62	5,856.10	11.30	10.66	-146.28	1,185.71	1,164.43	21.28	55.732	0		
6,100.00	6,034.19	5,985.55	5,953.38	11.49	10.84	-146.27	1,205.97	1,184.34	21.63	55.743	0		
6,200.00	6,132.90	6,083.47	6,050.66	11.68	11.02	-146.26	1,226.23	1,204.24	21.99	55.753	0		
6,300.00	6,231.61	6,181.40	6,147.94	11.88	11.20	-146.25	1,246.49	1,224.14	22.35	55.763	0		
6,393.93	6,324.32	6,273.38	6,239.31	12.06	11.37	-146.24	1,265.53	1,242.84	22.69	55.772	0		
6,400.00	6,330.31	6,279.33	6,245.22	12.07	11.38	-146.25	1,266.75	1,244.04	22.72	55.767	0		
6,500.00	6,429.31	6,377.56	6,342.80	12.26	11.56	-146.40	1,285.42	1,262.30	23.11	55.620	0		
6,600.00	6,528.74	6,476.24	6,440.83	12.44	11.75	-146.44	1,301.22	1,277.73	23.49	55.388	0		
6,700.00	6,628.48	6,608.45	6,572.41	12.61	11.98	-146.35	1,313.08	1,289.17	23.92	54.906	0		
6,800.00	6,728.41	6,747.24	6,711.01	12.77	12.22	-146.30	1,319.16	1,294.83	24.33	54.227	0		
6,854.98	6,783.38	6,822.61	6,786.38	12.86	12.35	-179.59	1,320.00	1,295.26	24.74	53.357	0		
6,900.00	6,828.40	6,867.63	6,831.40	12.93	12.42	-179.59	1,320.00	1,295.11	24.89	53.032	0		
6,954.98	6,883.38	6,922.66	6,886.43	13.02	12.52	-179.59	1,320.00	1,294.92	25.08	52.641	0		
7,000.00	6,928.37	6,968.35	6,932.07	13.09	12.59	90.40	1,320.00	1,294.97	25.03	52.741	0		
7,050.00	6,978.05	7,019.07	6,982.43	13.17	12.67	90.39	1,319.99	1,294.81	25.18	52.418	0		
7,100.00	7,027.15	7,069.76	7,032.14	13.24	12.74	90.37	1,319.99	1,294.66	25.33	52.115	0		
7,150.00	7,075.37	7,120.42	7,080.87	13.30	12.81	90.35	1,319.99	1,294.52	25.47	51.831	0		
7,200.00	7,122.40	7,171.04	7,128.32	13.37	12.87	90.33	1,319.99	1,294.39	25.60	51.561	0		
7,250.00	7,167.96	7,221.62	7,174.19	13.43	12.94	90.31	1,319.98	1,294.25	25.73	51.303	0		
7,300.00	7,211.76	7,272.16	7,218.18	13.49	13.00	90.28	1,319.98	1,294.13	25.85	51.054	0		
7,350.00	7,253.54	7,322.64	7,260.03	13.55	13.06	90.26	1,319.98	1,294.00	25.98	50.809	0		
7,400.00	7,293.04	7,373.08	7,299.47	13.61	13.12	90.23	1,319.97	1,293.87	26.10	50.565	0		
7,450.00	7,330.01	7,423.47	7,336.26	13.67	13.18	90.20	1,319.97	1,293.74	26.23	50.317	0		
7,500.00	7,364.22	7,473.79	7,370.18	13.73	13.25	90.17	1,319.97	1,293.60	26.37	50.061	0		
7,550.00	7,395.48	7,524.07	7,401.02	13.79	13.31	90.14	1,319.97	1,293.46	26.51	49.793	0		
7,600.00	7,423.57	7,574.28	7,428.61	13.86	13.38	90.10	1,319.97	1,293.31	26.66	49.508	0		
7,650.00	7,448.34	7,624.43	7,452.78	13.93	13.46	90.07	1,319.97	1,293.14	26.83	49.205	0		
7,700.00	7,469.62	7,674.52	7,473.40	14.01	13.53	90.04	1,319.96	1,292.96	27.00	48.881	0		
7,749.67	7,487.18	7,724.22	7,490.25	14.09	13.62	90.00	1,319.96	1,292.77	27.20	48.535	0		
7,750.00	7,487.29	7,724.55	7,490.35	14.09	13.62	90.00	1,319.96	1,292.77	27.20	48.533	0		
7,800.00	7,501.23	7,774.52	7,503.54	14.18	13.72	89.97	1,319.96	1,292.56	27.41	48.162	0		
7,850.00	7,511.36	7,824.43	7,512.90	14.28	13.83	89.94	1,319.97	1,292.33	27.63	47.768	0		
7,900.00	7,517.63	7,874.28	7,518.39	14.38	13.95	89.90	1,319.97	1,292.09	27.88	47.352	0		
7,954.98	7,520.00	7,929.06	7,520.00	14.51	14.10	89.87	1,319.97	1,291.81	28.16	46.873	0		
8,000.00	7,520.00	7,974.09	7,520.00	14.63	14.22	89.87	1,319.97	1,291.56	28.41	46.462	0		
8,100.00	7,520.00	8,074.09	7,520.00	14.90	14.52	89.87	1,319.97	1,290.97	29.00	45.513	0		
8,200.00	7,520.00	8,174.09	7,520.00	15.22	14.85	89.87	1,319.97	1,290.32	29.65	44.520	0		
8,300.00	7,520.00	8,274.09	7,520.00	15.56	15.20	89.87	1,319.97	1,289.62	30.35	43.496	0		
8,400.00	7,520.00	8,374.09	7,520.00	15.92	15.58	89.87	1,319.97	1,288.88	31.09	42.452	0		
8,500.00	7,520.00	8,474.09	7,520.00	16.31	15.97	89.87	1,319.97	1,288.08	31.88	41.399	0		
8,600.00	7,520.00	8,574.09	7,520.00	16.72	16.39	89.87	1,319.97	1,287.25	32.72	40.346	0		
8,700.00	7,520.00	8,674.09	7,520.00	17.15	16.83	89.87	1,319.97	1,286.38	33.59	39.300	0		
8,800.00	7,520.00	8,774.09	7,520.00	17.59	17.28	89.87	1,319.97	1,285.48	34.49	38.267	0		
8,900.00	7,520.00	8,874.09	7,520.00	18.05	17.75	89.87	1,319.97	1,284.54	35.43	37.253	0		
9,000.00	7,520.00	8,974.09	7,520.00	18.53	18.23	89.87	1,319.97	1,283.57	36.40	36.261	0		
9,100.00	7,520.00	9,074.09	7,520.00	19.02	18.73	89.87	1,319.97	1,282.57	37.40	35.295	0		
9,200.00	7,520.00	9,174.09	7,520.00	19.53	19.24	89.87	1,319.97	1,281.55	38.42	34.355	0		

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



Schlumberger

Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 9 - Original Hole - Rev 0		Offset Site Error:		0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:		0.00 usft		
Reference		Offset		Semi Major Axis		Distance							Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision					
9,300.00	7,520.00	9,274.09	7,520.00	20.04	19.77	89.87	1,319.97	1,280.50	39.47	33.445	0						
9,400.00	7,520.00	9,374.09	7,520.00	20.57	20.30	89.87	1,319.97	1,279.43	40.54	32.563	0						
9,500.00	7,520.00	9,474.09	7,520.00	21.11	20.84	89.87	1,319.97	1,278.35	41.62	31.712	0						
9,600.00	7,520.00	9,574.09	7,520.00	21.65	21.40	89.87	1,319.97	1,277.24	42.73	30.890	0						
9,700.00	7,520.00	9,674.09	7,520.00	22.21	21.96	89.87	1,319.97	1,276.11	43.85	30.099	0						
9,800.00	7,520.00	9,774.09	7,520.00	22.77	22.53	89.87	1,319.97	1,274.97	45.00	29.336	0						
9,900.00	7,520.00	9,874.09	7,520.00	23.34	23.11	89.87	1,319.97	1,273.82	46.15	28.602	0						
10,000.00	7,520.00	9,974.09	7,520.00	23.92	23.69	89.87	1,319.97	1,272.65	47.32	27.896	0						
10,100.00	7,520.00	10,074.09	7,520.00	24.51	24.28	89.87	1,319.97	1,271.47	48.50	27.216	0						
10,200.00	7,520.00	10,174.09	7,520.00	25.10	24.88	89.87	1,319.97	1,270.28	49.69	26.563	0						
10,300.00	7,520.00	10,274.09	7,520.00	25.69	25.48	89.87	1,319.97	1,269.07	50.90	25.934	0						
10,400.00	7,520.00	10,374.09	7,520.00	26.29	26.08	89.87	1,319.97	1,267.86	52.11	25.330	0						
10,500.00	7,520.00	10,474.09	7,520.00	26.90	26.69	89.87	1,319.97	1,266.64	53.33	24.749	0						
10,600.00	7,520.00	10,574.09	7,520.00	27.51	27.31	89.87	1,319.97	1,265.40	54.57	24.190	0						
10,700.00	7,520.00	10,674.09	7,520.00	28.13	27.93	89.87	1,319.97	1,264.16	55.81	23.652	0						
10,800.00	7,520.00	10,774.09	7,520.00	28.75	28.55	89.87	1,319.97	1,262.92	57.06	23.135	0						
10,900.00	7,520.00	10,874.09	7,520.00	29.37	29.18	89.87	1,319.97	1,261.66	58.31	22.637	0						
11,000.00	7,520.00	10,974.09	7,520.00	30.00	29.81	89.87	1,319.97	1,260.40	59.57	22.157	0						
11,100.00	7,520.00	11,074.09	7,520.00	30.63	30.45	89.87	1,319.97	1,259.13	60.84	21.695	0						
11,200.00	7,520.00	11,174.09	7,520.00	31.26	31.08	89.87	1,319.97	1,257.85	62.12	21.250	0						
11,300.00	7,520.00	11,274.09	7,520.00	31.90	31.72	89.87	1,319.97	1,256.57	63.40	20.821	0						
11,400.00	7,520.00	11,374.09	7,520.00	32.54	32.37	89.87	1,319.97	1,255.29	64.68	20.407	0						
11,500.00	7,520.00	11,474.09	7,520.00	33.18	33.01	89.87	1,319.97	1,254.00	65.97	20.008	0						
11,600.00	7,520.00	11,574.09	7,520.00	33.82	33.66	89.87	1,319.97	1,252.70	67.27	19.622	0						
11,700.00	7,520.00	11,674.09	7,520.00	34.47	34.31	89.87	1,319.97	1,251.40	68.57	19.250	0						
11,800.00	7,520.00	11,774.09	7,520.00	35.12	34.96	89.87	1,319.97	1,250.10	69.87	18.891	0						
11,900.00	7,520.00	11,874.09	7,520.00	35.77	35.61	89.87	1,319.97	1,248.79	71.18	18.544	0						
12,000.00	7,520.00	11,974.09	7,520.00	36.42	36.27	89.87	1,319.97	1,247.48	72.49	18.209	0						
12,100.00	7,520.00	12,074.09	7,520.00	37.07	36.92	89.87	1,319.97	1,246.17	73.81	17.884	0						
12,200.00	7,520.00	12,174.09	7,520.00	37.73	37.58	89.87	1,319.97	1,244.85	75.12	17.570	0						
12,300.00	7,520.00	12,274.09	7,520.00	38.39	38.24	89.87	1,319.97	1,243.53	76.45	17.267	0						
12,400.00	7,520.00	12,374.09	7,520.00	39.05	38.91	89.87	1,319.97	1,242.20	77.77	16.973	0						
12,500.00	7,520.00	12,474.09	7,520.00	39.71	39.57	89.87	1,319.97	1,240.87	79.10	16.688	0						
12,600.00	7,520.00	12,574.09	7,520.00	40.37	40.23	89.87	1,319.97	1,239.54	80.43	16.412	0						
12,700.00	7,520.00	12,674.09	7,520.00	41.04	40.90	89.87	1,319.97	1,238.21	81.76	16.144	0						
12,800.00	7,520.00	12,774.09	7,520.00	41.70	41.57	89.87	1,319.97	1,236.88	83.10	15.885	0						
12,900.00	7,520.00	12,874.09	7,520.00	42.37	42.24	89.87	1,319.97	1,235.54	84.43	15.633	0						
13,000.00	7,520.00	12,974.09	7,520.00	43.03	42.91	89.87	1,319.97	1,234.20	85.77	15.389	0						
13,100.00	7,520.00	13,074.09	7,520.00	43.70	43.58	89.87	1,319.97	1,232.86	87.11	15.152	0						
13,200.00	7,520.00	13,174.09	7,520.00	44.37	44.25	89.87	1,319.97	1,231.51	88.46	14.922	0						
13,300.00	7,520.00	13,274.09	7,520.00	45.04	44.92	89.87	1,319.97	1,230.17	89.80	14.698	0						
13,400.00	7,520.00	13,374.09	7,520.00	45.72	45.59	89.87	1,319.97	1,228.82	91.15	14.481	0						
13,500.00	7,520.00	13,474.09	7,520.00	46.39	46.27	89.87	1,319.97	1,227.47	92.50	14.270	0						
13,600.00	7,520.00	13,574.09	7,520.00	47.06	46.94	89.87	1,319.97	1,226.12	93.85	14.064	0						
13,700.00	7,520.00	13,674.09	7,520.00	47.74	47.62	89.87	1,319.97	1,224.77	95.21	13.865	0						
13,800.00	7,520.00	13,774.09	7,520.00	48.41	48.30	89.87	1,319.97	1,223.41	96.56	13.670	0						
13,900.00	7,520.00	13,874.09	7,520.00	49.09	48.98	89.87	1,319.97	1,222.06	97.92	13.481	0						
14,000.00	7,520.00	13,974.09	7,520.00	49.76	49.65	89.87	1,319.97	1,220.70	99.27	13.297	0						
14,100.00	7,520.00	14,074.09	7,520.00	50.44	50.33	89.87	1,319.97	1,219.34	100.63	13.117	0						
14,200.00	7,520.00	14,174.09	7,520.00	51.12	51.01	89.87	1,319.97	1,217.98	101.99	12.942	0						
14,300.00	7,520.00	14,274.09	7,520.00	51.80	51.69	89.87	1,319.97	1,216.62	103.35	12.772	0						
14,400.00	7,520.00	14,374.09	7,520.00	52.48	52.37	89.87	1,319.97	1,215.26	104.71	12.605	0						
14,500.00	7,520.00	14,474.09	7,520.00	53.16	53.06	89.87	1,319.97	1,213.90	106.08	12.443	0						
14,600.00	7,520.00	14,574.09	7,520.00	53.84	53.74	89.87	1,319.97	1,212.53	107.44	12.285	0						

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



Schlumberger
Anticollision Risk Report

PATHFINDER
A Schlumberger Company

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Offset Design													Sec.08-T07N-R66W - Thornton 9 - Original Hole - Rev 0		Offset Site Error:		0.00 usft
Survey Program: 0-Pathfinder													Offset Well Error:		0.00 usft		
Reference		Offset		Semi Major Axis		Distance							Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Risked Separation Factor	Probability of Collision					
14,700.00	7,520.00	14,674.09	7,520.00	54.52	54.42	89.87	1,319.97	1,211.17	108.81	12.131	0						
14,800.00	7,520.00	14,774.09	7,520.00	55.20	55.10	89.87	1,319.97	1,209.80	110.17	11.981	0						
14,900.00	7,520.00	14,874.09	7,520.00	55.89	55.79	89.87	1,319.97	1,208.43	111.54	11.834	0						
15,000.00	7,520.00	14,974.09	7,520.00	56.57	56.47	89.87	1,319.97	1,207.06	112.91	11.690	0						
15,100.00	7,520.00	15,074.09	7,520.00	57.25	57.16	89.87	1,319.97	1,205.69	114.28	11.550	0						
15,200.00	7,520.00	15,174.09	7,520.00	57.94	57.84	89.87	1,319.97	1,204.32	115.65	11.413	0						
15,300.00	7,520.00	15,274.09	7,520.00	58.62	58.53	89.87	1,319.97	1,202.95	117.02	11.280	0						
15,400.00	7,520.00	15,374.09	7,520.00	59.30	59.21	89.87	1,319.98	1,201.58	118.40	11.149	0						
15,500.00	7,520.00	15,474.09	7,520.00	59.99	59.90	89.87	1,319.98	1,200.21	119.77	11.021	0						
15,600.00	7,520.00	15,574.09	7,520.00	60.68	60.59	89.87	1,319.98	1,198.83	121.14	10.896	0						
15,700.00	7,520.00	15,674.09	7,520.00	61.36	61.27	89.87	1,319.98	1,197.46	122.52	10.774	0						
15,800.00	7,520.00	15,774.09	7,520.00	62.05	61.96	89.87	1,319.98	1,196.08	123.89	10.654	0						
15,900.00	7,520.00	15,874.09	7,520.00	62.74	62.65	89.87	1,319.98	1,194.71	125.27	10.537	0						
16,000.00	7,520.00	15,974.09	7,520.00	63.42	63.34	89.87	1,319.98	1,193.33	126.65	10.423	0						
16,100.00	7,520.00	16,074.09	7,520.00	64.11	64.03	89.87	1,319.98	1,191.95	128.02	10.311	0						
16,200.00	7,520.00	16,174.09	7,520.00	64.80	64.71	89.87	1,319.98	1,190.58	129.40	10.201	0						
16,300.00	7,520.00	16,274.09	7,520.00	65.49	65.40	89.87	1,319.98	1,189.20	130.78	10.093	0						
16,400.00	7,520.00	16,374.09	7,520.00	66.18	66.09	89.87	1,319.98	1,187.82	132.16	9.988	0						
16,500.00	7,520.00	16,474.09	7,520.00	66.86	66.78	89.87	1,319.98	1,186.44	133.54	9.885	0						
16,600.00	7,520.00	16,574.09	7,520.00	67.55	67.47	89.87	1,319.98	1,185.06	134.92	9.783	0						
16,700.00	7,520.00	16,674.09	7,520.00	68.24	68.16	89.87	1,319.98	1,183.68	136.30	9.684	0						
16,800.00	7,520.00	16,774.09	7,520.00	68.93	68.85	89.87	1,319.98	1,182.30	137.68	9.587	0						
16,900.00	7,520.00	16,874.09	7,520.00	69.62	69.55	89.87	1,319.98	1,180.91	139.06	9.492	0						
17,000.00	7,520.00	16,974.09	7,520.00	70.31	70.24	89.87	1,319.98	1,179.53	140.45	9.398	0						
17,100.00	7,520.00	17,074.09	7,520.00	71.00	70.93	89.87	1,319.98	1,178.15	141.83	9.307	0						
17,200.00	7,520.00	17,174.09	7,520.00	71.69	71.62	89.87	1,319.98	1,176.76	143.21	9.217	0						
17,300.00	7,520.00	17,274.09	7,520.00	72.39	72.31	89.87	1,319.98	1,175.38	144.60	9.129	0						
17,400.00	7,520.00	17,374.09	7,520.00	73.08	73.00	89.87	1,319.98	1,174.00	145.98	9.042	0						
17,500.00	7,520.00	17,474.09	7,520.00	73.77	73.70	89.87	1,319.98	1,172.61	147.37	8.957	0						
17,582.23	7,520.00	17,558.55	7,520.00	74.34	74.28	89.87	1,319.88	1,171.36	148.52	8.887	0	SF					

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 5049.00usft (Xtreme 7 - 16')

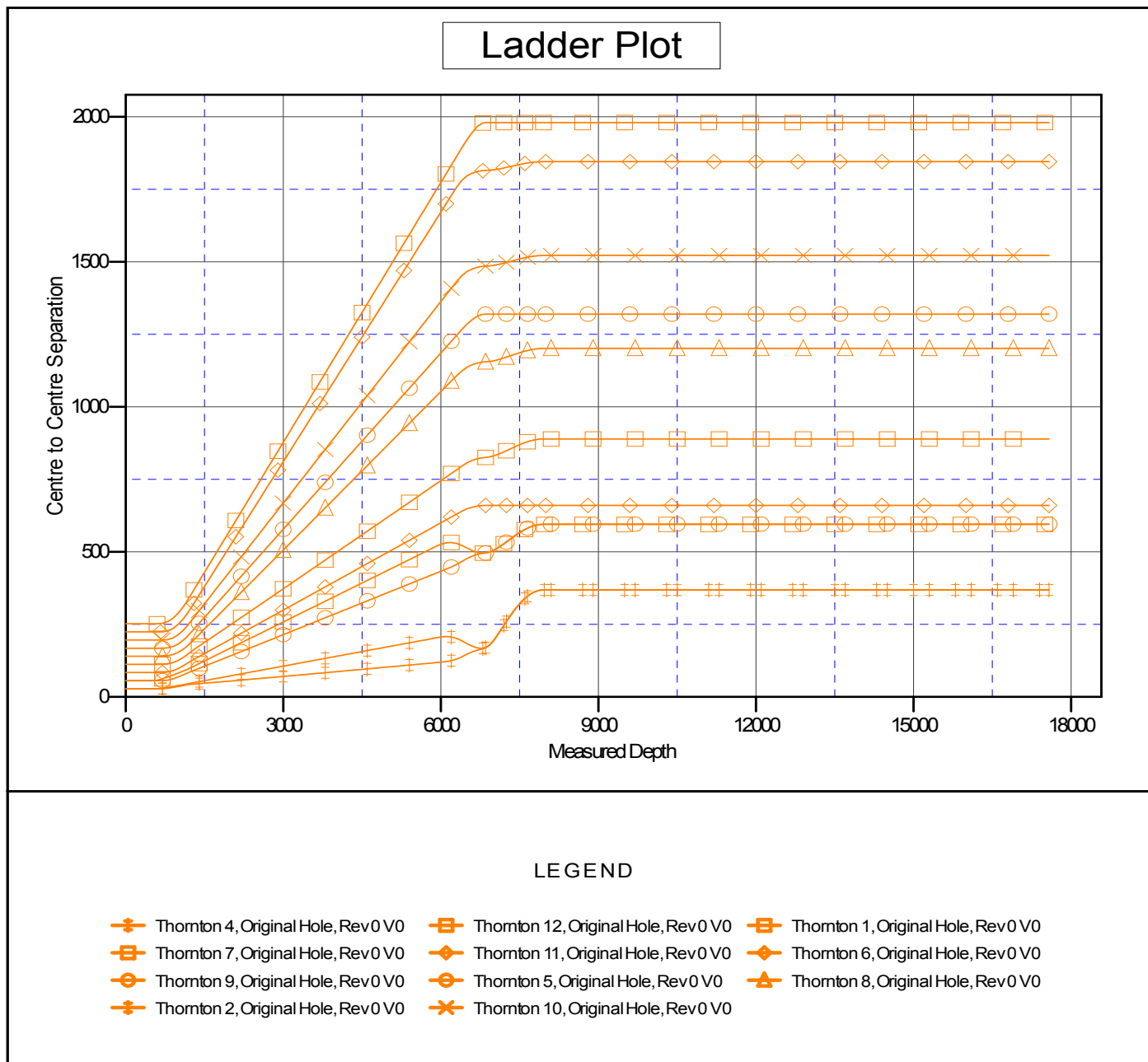
Offset Depths are relative to Offset Datum

Central Meridian is 105° 30' 0.000 W °

Coordinates are relative to: Thornton 3

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.45°



Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Thornton 3
Project:	Weld Co., Co	TVD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Reference Site:	Sec.08-T07N-R66W	MD Reference:	KB @ 5049.00usft (Xtreme 7 - 16')
Site Error:	0.00	North Reference:	Grid
Reference Well:	Thornton 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00	Output errors are at	2.00 sigma
Reference Wellbore	Original Hole	Database:	EDM 5000.1 Single User Db
Reference Design:	Rev 0	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 5049.00usft (Xtreme 7 - 16')

Offset Depths are relative to Offset Datum

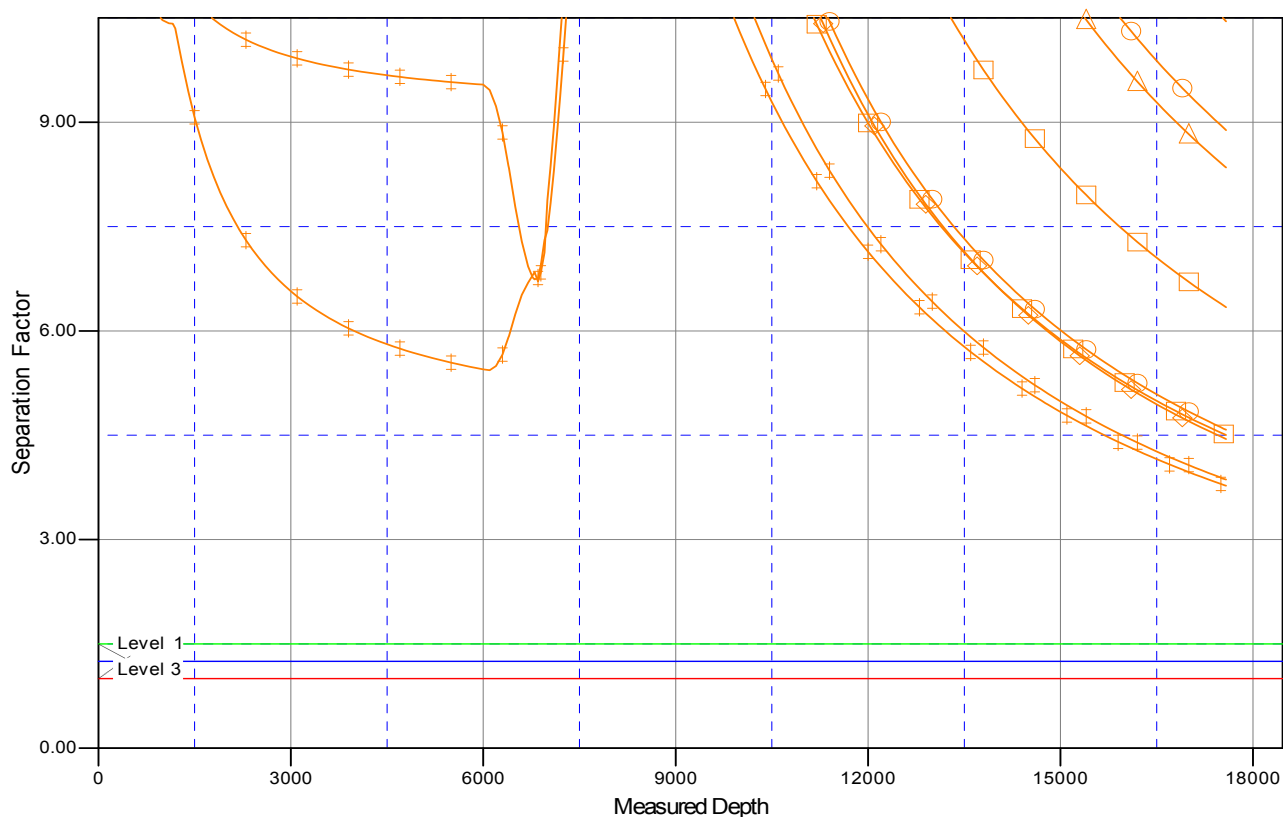
Central Meridian is 105° 30' 0.000 W °

Coordinates are relative to: Thornton 3

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.45°

Separation Factor Plot



LEGEND

- Thornton 4, Original Hole, Rev0 V0
- Thornton 7, Original Hole, Rev0 V0
- Thornton 9, Original Hole, Rev0 V0
- Thornton 2, Original Hole, Rev0 V0
- Thornton 12, Original Hole, Rev0 V0
- Thornton 11, Original Hole, Rev0 V0
- Thornton 5, Original Hole, Rev0 V0
- Thornton 10, Original Hole, Rev0 V0
- Thornton 1, Original Hole, Rev0 V0
- Thornton 6, Original Hole, Rev0 V0
- Thornton 8, Original Hole, Rev0 V0