

Devon Energy

Anticollision Risk Report

Company: WESTERN DIVISION
Project: PBNM
Reference Site: Dzurisin
Site Error: 0.00
Reference Well: Thistle Unit 158H
Well Error: 0.00
Reference Wellbore: Wellbore #1
Reference Design: Plan 1

Local Co-ordinate Reference: Well Thistle Unit 158H
TVD Reference: 1 @ 3713.40ft
MD Reference: 1 @ 3713.40ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM r5000 US Production
Offset TVD Reference: Offset Datum

Reference	Plan 1	HOBBS OCD FEB 13 2017 RECEIVED	
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations Interval 100.00ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.00ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

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

Survey Tool Program		Date 8/1/2016
From (ft)	To (ft)	Survey (Wellbore)
0.00	19,993.43	Plan 1 (Wellbore #1)
		Tool Name
		MWD
		Description
		MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Dzurisin						
Thistle Unit 154H - Wellbore #1 - Plan 1	5,000.00	4,999.20	50.00	27.80	2.253 CC, ES	
Thistle Unit 154H - Wellbore #1 - Plan 1	5,100.00	5,099.20	50.87	28.23	2.247 SF	

Offset Design												
Dzurisin - Thistle Unit 154H - Wellbore #1 - Plan 1												
Survey Program: 0-MWD												Offset Site Error: 0.00 ft
												Offset Well Error: 0.00 ft
Reference	Offset	Semi Major Axis		Distance								
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Risked Separation Factor	Probability of Collision
0.00	0.00	0.00	0.00	0.00	0.00	179.61	50.01					
100.00	100.00	99.20	99.20	0.09	0.09	179.61	50.00	49.83	0.17	291.964	0	
200.00	200.00	199.20	199.20	0.31	0.31	179.61	50.00	49.38	0.62	80.689	0	
300.00	300.00	299.20	299.20	0.54	0.53	179.61	50.00	48.93	1.07	46.765	0	
400.00	400.00	399.20	399.20	0.76	0.76	179.61	50.00	48.48	1.52	32.923	0	
500.00	500.00	499.20	499.20	0.99	0.98	179.61	50.00	48.03	1.97	25.404	0	
600.00	600.00	599.20	599.20	1.21	1.21	179.61	50.00	47.58	2.42	20.680	0	
700.00	700.00	699.20	699.20	1.43	1.43	179.61	50.00	47.13	2.87	17.438	0	
800.00	800.00	799.20	799.20	1.66	1.66	179.61	50.00	46.68	3.32	15.075	0	
900.00	900.00	899.20	899.20	1.88	1.88	179.61	50.00	46.23	3.77	13.276	0	
1,000.00	1,000.00	999.20	999.20	2.11	2.11	179.61	50.00	45.79	4.22	11.860	0	
1,100.00	1,100.00	1,099.20	1,099.20	2.33	2.33	179.61	50.00	45.34	4.67	10.717	0	
1,200.00	1,200.00	1,199.20	1,199.20	2.56	2.56	179.61	50.00	44.89	5.12	9.775	0	
1,300.00	1,300.00	1,299.20	1,299.20	2.78	2.78	179.61	50.00	44.44	5.56	8.986	0	
1,400.00	1,400.00	1,399.20	1,399.20	3.01	3.01	179.61	50.00	43.99	6.01	8.314	0	
1,500.00	1,500.00	1,499.20	1,499.20	3.23	3.23	179.61	50.00	43.54	6.46	7.736	0	
1,600.00	1,600.00	1,599.20	1,599.20	3.46	3.46	179.61	50.00	43.09	6.91	7.233	0	
1,700.00	1,700.00	1,699.20	1,699.20	3.68	3.68	179.61	50.00	42.64	7.36	6.791	0	
1,800.00	1,800.00	1,799.20	1,799.20	3.91	3.91	179.61	50.00	42.19	7.81	6.400	0	
1,900.00	1,900.00	1,899.20	1,899.20	4.13	4.13	179.61	50.00	41.74	8.26	6.052	0	
2,000.00	2,000.00	1,999.20	1,999.20	4.36	4.35	179.61	50.00	41.29	8.71	5.740	0	

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

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Local Co-ordinate Reference: Well Thistle Unit 158H
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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM r5000 US Production
Offset TVD Reference: Offset Datum

Offset Design Dzurisin - Thistle Unit 154H - Wellbore #1 - Plan 1													Offset Site Error:	0.00 ft	
Survey Program: 0-MWD													Offset Well Error:	0.00 ft	
Reference		Offset		Semi Major Axis		Distance							Risked Separation Factor	Probability of Collision	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor					
2,100.00	2,100.00	2,099.20	2,099.20	4.58	4.58	179.61	50.00	40.84	9.16	5.458	0				
2,200.00	2,200.00	2,199.20	2,199.20	4.81	4.80	179.61	50.00	40.39	9.61	5.203	0				
2,300.00	2,300.00	2,299.20	2,299.20	5.03	5.03	179.61	50.00	39.94	10.06	4.970	0				
2,400.00	2,400.00	2,399.20	2,399.20	5.26	5.25	179.61	50.00	39.49	10.51	4.758	0				
2,500.00	2,500.00	2,499.20	2,499.20	5.48	5.48	179.61	50.00	39.04	10.96	4.563	0				
2,600.00	2,600.00	2,599.20	2,599.20	5.71	5.70	179.61	50.00	38.59	11.41	4.383	0				
2,700.00	2,700.00	2,699.20	2,699.20	5.93	5.93	179.61	50.00	38.14	11.86	4.217	0				
2,800.00	2,800.00	2,799.20	2,799.20	6.15	6.15	179.61	50.00	37.69	12.31	4.063	0				
2,900.00	2,900.00	2,899.20	2,899.20	6.38	6.38	179.61	50.00	37.24	12.76	3.920	0				
3,000.00	3,000.00	2,999.20	2,999.20	6.60	6.60	179.61	50.00	36.79	13.21	3.786	0				
3,100.00	3,100.00	3,099.20	3,099.20	6.83	6.83	179.61	50.00	36.35	13.66	3.661	0				
3,200.00	3,200.00	3,199.20	3,199.20	7.05	7.05	179.61	50.00	35.90	14.11	3.545	0				
3,300.00	3,300.00	3,299.20	3,299.20	7.28	7.28	179.61	50.00	35.45	14.56	3.435	0				
3,400.00	3,400.00	3,399.20	3,399.20	7.50	7.50	179.61	50.00	35.00	15.00	3.332	0				
3,500.00	3,500.00	3,499.20	3,499.20	7.73	7.73	179.61	50.00	34.55	15.45	3.235	0				
3,600.00	3,600.00	3,599.20	3,599.20	7.95	7.95	179.61	50.00	34.10	15.90	3.144	0				
3,700.00	3,700.00	3,699.20	3,699.20	8.18	8.18	179.61	50.00	33.65	16.35	3.058	0				
3,800.00	3,800.00	3,799.20	3,799.20	8.40	8.40	179.61	50.00	33.20	16.80	2.976	0				
3,900.00	3,900.00	3,899.20	3,899.20	8.63	8.63	179.61	50.00	32.75	17.25	2.898	0				
4,000.00	4,000.00	3,999.20	3,999.20	8.85	8.85	179.61	50.00	32.30	17.70	2.825	0				
4,100.00	4,100.00	4,099.20	4,099.20	9.08	9.07	179.61	50.00	31.85	18.15	2.755	0				
4,200.00	4,200.00	4,199.20	4,199.20	9.30	9.30	179.61	50.00	31.40	18.60	2.688	0				
4,300.00	4,300.00	4,299.20	4,299.20	9.53	9.52	179.61	50.00	30.95	19.05	2.625	0				
4,400.00	4,400.00	4,399.20	4,399.20	9.75	9.75	179.61	50.00	30.50	19.50	2.564	0				
4,500.00	4,500.00	4,499.20	4,499.20	9.98	9.97	179.61	50.00	30.05	19.95	2.506	0				
4,600.00	4,600.00	4,599.20	4,599.20	10.20	10.20	179.61	50.00	29.60	20.40	2.451	0				
4,700.00	4,700.00	4,699.20	4,699.20	10.43	10.42	179.61	50.00	29.15	20.85	2.398	0				
4,800.00	4,800.00	4,799.20	4,799.20	10.65	10.65	179.61	50.00	28.70	21.30	2.348	0				
4,900.00	4,900.00	4,899.20	4,899.20	10.87	10.87	179.61	50.00	28.25	21.75	2.299	0				
5,000.00	5,000.00	4,999.20	4,999.20	11.10	11.10	179.61	50.00	27.80	22.20	2.253	0				
5,100.00	5,100.00	5,099.20	5,099.20	11.32	11.32	179.62	50.87	28.23	22.64	2.247	0				
5,200.00	5,199.96	5,199.16	5,199.16	11.55	11.55	179.64	53.49	30.41	23.08	2.317	0				
5,300.00	5,299.86	5,299.06	5,299.06	11.77	11.77	179.66	57.85	34.33	23.52	2.460	0				
5,400.00	5,399.68	5,398.88	5,398.88	12.00	12.00	179.69	63.96	40.01	23.95	2.671	0				
5,500.00	5,499.37	5,498.57	5,498.57	12.22	12.22	179.73	71.80	47.44	24.37	2.947	0				
5,600.00	5,598.99	5,598.19	5,598.19	12.45	12.44	179.76	80.52	55.70	24.82	3.245	0				
5,700.00	5,698.60	5,697.80	5,697.80	12.67	12.67	179.78	89.23	63.97	25.26	3.532	0				
5,800.00	5,798.22	5,797.42	5,797.42	12.90	12.89	179.80	97.95	72.24	25.71	3.809	0				
5,900.00	5,897.84	5,897.04	5,897.04	13.14	13.12	179.82	106.67	80.50	26.16	4.077	0				
6,000.00	5,997.46	5,996.66	5,996.66	13.38	13.34	179.83	115.38	88.77	26.61	4.336	0				
6,100.00	6,097.08	6,096.28	6,096.28	13.63	13.56	179.84	124.10	97.04	27.06	4.586	0				
6,200.00	6,196.70	6,195.90	6,195.90	13.88	13.79	179.85	132.81	105.30	27.51	4.828	0				
6,300.00	6,296.32	6,295.52	6,295.52	14.14	14.01	179.86	141.53	113.57	27.96	5.062	0				
6,400.00	6,395.94	6,395.14	6,395.14	14.39	14.24	179.87	150.24	121.83	28.41	5.288	0				
6,500.00	6,495.56	6,494.76	6,494.76	14.66	14.46	179.88	158.96	130.10	28.86	5.507	0				
6,600.00	6,595.22	6,594.42	6,594.42	14.89	14.68	179.88	167.24	137.94	29.30	5.708	0				
6,700.00	6,694.94	6,694.14	6,694.14	15.09	14.91	179.89	174.65	144.94	29.71	5.879	0				
6,800.00	6,794.73	6,793.93	6,793.93	15.29	15.13	179.89	181.19	151.08	30.11	6.017	0				
6,900.00	6,894.57	6,893.77	6,893.77	15.49	15.36	179.90	186.86	156.34	30.52	6.123	0				
7,000.00	6,994.45	6,993.65	6,993.65	15.69	15.58	179.90	191.66	160.73	30.92	6.198	0				
7,100.00	7,094.37	7,093.57	7,093.57	15.88	15.81	179.90	195.58	164.25	31.33	6.243	0				
7,200.00	7,194.33	7,193.53	7,193.53	16.07	16.03	179.90	198.64	166.90	31.73	6.259	0				
7,300.00	7,294.30	7,293.50	7,293.50	16.26	16.25	179.90	200.82	168.68	32.14	6.249	0				
7,400.00	7,394.29	7,393.49	7,393.49	16.44	16.48	179.90	202.13	169.59	32.54	6.212	0				

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

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Reference Well: Thistle Unit 158H
Well Error: 0.00
Reference Wellbore: Wellbore #1
Reference Design: Plan 1

Local Co-ordinate Reference: Well Thistle Unit 158H
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Offset Design Dzurisin - Thistle Unit 154H - Wellbore #1 - Plan 1													Offset Site Error: 0.00 ft	
Survey Program: 0-MWD													Offset Well Error: 0.00 ft	
Reference		Offset		Semi Major Axis		Distance					Risked Separation Factor	Probability of Collision	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor				
7,500.00	7,494.29	7,493.49	7,493.49	16.62	16.70	179.90	202.56	169.62	32.94	6.149	0			
7,600.00	7,594.29	7,593.49	7,593.49	16.81	16.93	179.90	202.56	169.20	33.37	6.071	0			
7,700.00	7,694.29	7,693.49	7,693.49	17.03	17.15	179.90	202.56	168.75	33.82	5.990	0			
7,800.00	7,794.29	7,793.49	7,793.49	17.25	17.38	179.90	202.56	168.30	34.26	5.912	0			
7,900.00	7,894.29	7,893.49	7,893.49	17.46	17.60	179.90	202.56	167.85	34.71	5.836	0			
8,000.00	7,994.29	7,993.49	7,993.49	17.68	17.83	179.90	202.56	167.40	35.16	5.761	0			
8,100.00	8,094.29	8,093.49	8,093.49	17.90	18.05	179.90	202.56	166.96	35.61	5.689	0			
8,200.00	8,194.29	8,193.49	8,193.49	18.12	18.28	179.90	202.56	166.51	36.06	5.618	0			
8,300.00	8,294.29	8,293.49	8,293.49	18.34	18.50	179.90	202.56	166.06	36.50	5.549	0			
8,400.00	8,394.29	8,393.49	8,393.49	18.55	18.73	179.90	202.56	165.61	36.95	5.482	0			
8,500.00	8,494.29	8,493.49	8,493.49	18.77	18.95	179.90	202.56	165.16	37.40	5.416	0			
8,600.00	8,594.29	8,593.49	8,593.49	18.99	19.18	179.90	202.56	164.71	37.85	5.352	0			
8,700.00	8,694.29	8,693.49	8,693.49	19.21	19.40	179.90	202.56	164.27	38.30	5.289	0			
8,800.00	8,794.29	8,793.49	8,793.49	19.43	19.63	179.90	202.56	163.82	38.75	5.228	0			
8,900.00	8,894.29	8,893.49	8,893.49	19.65	19.85	179.90	202.56	163.37	39.19	5.168	0			
9,000.00	8,994.29	8,993.49	8,993.49	19.87	20.08	179.90	202.56	162.92	39.64	5.110	0			
9,100.00	9,094.29	9,093.49	9,093.49	20.08	20.30	179.90	202.56	162.47	40.09	5.053	0			
9,152.41	9,146.70	9,145.90	9,145.90	20.20	20.42	179.90	202.56	162.24	40.33	5.023	0			
9,200.00	9,194.29	9,184.56	9,184.55	20.30	20.50	179.91	203.22	162.71	40.51	5.016	0			
9,300.00	9,294.29	9,250.00	9,249.53	20.52	20.61	179.93	214.92	174.07	40.85	5.262	0			
9,400.00	9,394.29	9,319.23	9,316.49	20.74	20.72	179.98	240.39	199.20	41.19	5.836	0			
9,500.00	9,494.29	9,375.00	9,368.15	20.96	20.82	-179.96	278.43	236.93	41.50	6.709	0			
9,605.30	9,599.59	9,435.39	9,420.94	21.19	20.91	-179.90	329.92	288.09	41.83	7.886	0			
9,625.00	9,619.29	9,450.00	9,433.12	21.23	20.94	-0.48	340.43	298.57	41.86	8.132	0			
9,650.00	9,644.23	9,457.66	9,439.41	21.27	20.95	-0.46	353.13	311.31	41.81	8.445	0			
9,675.00	9,669.04	9,475.00	9,453.38	21.29	21.00	-0.44	365.37	323.66	41.71	8.760	0			
9,700.00	9,693.67	9,482.57	9,459.35	21.32	21.03	-0.42	376.92	335.40	41.52	9.078	0			
9,725.00	9,718.04	9,500.00	9,472.84	21.34	21.08	-0.40	388.01	346.73	41.28	9.400	0			
9,750.00	9,742.09	9,507.48	9,478.50	21.35	21.11	-0.39	398.38	357.42	40.96	9.727	0			
9,775.00	9,765.74	9,525.00	9,491.45	21.36	21.18	-0.37	408.27	367.68	40.59	10.059	0			
9,800.00	9,788.94	9,532.40	9,496.79	21.37	21.21	-0.36	417.43	377.29	40.14	10.399	0			
9,825.00	9,811.62	9,550.00	9,509.16	21.38	21.29	-0.35	426.10	386.45	39.65	10.746	0			
9,850.00	9,833.72	9,557.33	9,514.18	21.39	21.32	-0.34	434.04	394.94	39.10	11.101	0			
9,875.00	9,855.18	9,575.00	9,525.93	21.40	21.41	-0.33	441.46	402.95	38.51	11.464	0			
9,900.00	9,875.93	9,582.25	9,530.61	21.42	21.45	-0.32	448.14	410.28	37.86	11.836	0			
9,925.00	9,895.93	9,600.00	9,541.70	21.45	21.56	-0.32	454.30	417.11	37.19	12.215	0			
9,950.00	9,915.12	9,607.18	9,546.05	21.48	21.60	-0.31	459.71	423.23	36.48	12.603	0			
9,975.00	9,933.44	9,625.00	9,556.44	21.53	21.72	-0.31	464.59	428.84	35.75	12.996	0			
10,000.00	9,950.85	9,632.11	9,560.44	21.58	21.77	-0.30	468.70	433.71	34.99	13.395	0			
10,025.00	9,967.29	9,650.00	9,570.10	21.65	21.90	-0.30	472.29	438.06	34.24	13.795	0			
10,050.00	9,982.73	9,657.04	9,573.75	21.74	21.96	-0.30	475.11	441.64	33.47	14.196	0			
10,075.00	9,997.12	9,675.00	9,582.65	21.84	22.11	-0.29	477.40	444.67	32.72	14.589	0			
10,100.00	10,010.41	9,681.97	9,585.94	21.97	22.17	-0.29	478.90	446.92	31.98	14.974	0			
10,125.00	10,022.58	9,700.00	9,594.04	22.11	22.33	-0.29	479.88	448.60	31.28	15.339	0			
10,150.00	10,033.60	9,706.91	9,596.99	22.27	22.40	-0.29	480.08	449.46	30.61	15.682	0			
10,175.00	10,043.42	9,725.00	9,604.26	22.46	22.58	-0.29	479.74	449.74	30.01	15.988	0			
10,200.00	10,052.02	9,731.84	9,606.85	22.67	22.66	-0.29	478.62	449.18	29.45	16.254	0			
10,225.00	10,059.39	9,750.00	9,613.27	22.90	22.85	-0.29	476.98	448.01	28.97	16.463	0			
10,250.00	10,065.49	9,756.77	9,615.50	23.15	22.93	-0.29	474.55	445.98	28.57	16.612	0			
10,275.00	10,070.32	9,775.00	9,621.05	23.42	23.15	-0.30	471.61	443.34	28.27	16.684	0			
10,300.00	10,073.86	9,781.70	9,622.92	23.72	23.23	-0.30	467.87	439.82	28.05	16.681	0			
10,325.00	10,076.10	9,800.00	9,627.57	24.03	23.46	-0.30	463.63	435.68	27.95	16.590	0			
10,350.00	10,077.03	9,806.63	9,629.09	24.37	23.55	-0.31	458.60	430.66	27.94	16.415	0			
10,355.22	10,077.06	9,809.23	9,629.66	24.44	23.58	-0.31	457.48	429.53	27.95	16.368	0			

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

Devon Energy

Anticollision Risk Report

Company: WESTERN DIVISION
Project: PBNM
Reference Site: Dzurisin
Site Error: 0.00
Reference Well: Thistle Unit 158H
Well Error: 0.00
Reference Wellbore: Wellbore #1
Reference Design: Plan 1

Local Co-ordinate Reference: Well Thistle Unit 158H
TVD Reference: 1 @ 3713.40ft
MD Reference: 1 @ 3713.40ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM r5000 US Production
Offset TVD Reference: Offset Datum

Offset Design Dzurisin - Thistle Unit 154H - Wellbore #1 - Plan 1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis		Distance							Warning	
Measured Depth	Vertical	Measured	Vertical	Reference	Offset	Highside	Between	Between	Minimum	Separation	Risked	Probability		
Depth	Depth	Depth	Depth			Toolface	Centres	Ellipses	Separation	Factor	Separation	of Collision		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)		Factor			
10,370.73	10,077.06	9,816.99	9,631.28	24.57	23.69	-0.31	454.24	426.26	27.98	16.234	0			
10,400.00	10,077.07	9,831.78	9,634.02	24.84	23.89	-0.31	448.82	420.77	28.05	16.003	0			
10,500.00	10,077.09	9,883.32	9,640.05	26.45	24.65	-0.31	437.12	408.83	28.29	15.451	0			
10,600.00	10,077.11	9,957.95	9,641.24	28.29	25.90	-0.31	435.08	406.46	28.62	15.203	0			
10,700.00	10,077.13	10,057.95	9,641.76	30.33	27.75	-0.31	434.58	405.53	29.05	14.962	0			
10,800.00	10,077.15	10,157.95	9,642.28	32.52	29.79	-0.31	434.08	404.54	29.54	14.695	0			
10,900.00	10,077.17	10,257.95	9,642.80	34.84	32.00	-0.30	433.58	403.48	30.10	14.406	0			
11,000.00	10,077.19	10,357.95	9,643.32	37.27	34.32	-0.30	433.08	402.36	30.72	14.100	0			
11,100.00	10,077.21	10,457.94	9,643.84	39.78	36.76	-0.30	432.58	401.19	31.39	13.781	0			
11,200.00	10,077.23	10,557.94	9,644.36	42.35	39.28	-0.29	432.08	399.96	32.12	13.453	0			
11,300.00	10,077.25	10,657.94	9,644.88	44.99	41.86	-0.29	431.58	398.69	32.90	13.120	0			
11,400.00	10,077.27	10,757.94	9,645.40	47.68	44.51	-0.29	431.08	397.36	33.72	12.785	0			
11,500.00	10,077.29	10,857.94	9,645.92	50.40	47.20	-0.28	430.58	396.00	34.58	12.450	0			
11,600.00	10,077.31	10,957.94	9,646.43	53.16	49.94	-0.28	430.08	394.59	35.49	12.118	0			
11,700.00	10,077.33	11,057.94	9,646.95	55.95	52.70	-0.28	429.59	393.15	36.43	11.791	0			
11,800.00	10,077.35	11,157.94	9,647.47	58.76	55.50	-0.28	429.09	391.68	37.41	11.470	0			
11,900.00	10,077.37	11,257.93	9,647.99	61.59	58.32	-0.27	428.59	390.17	38.42	11.156	0			
12,000.00	10,077.39	11,357.93	9,648.51	64.45	61.16	-0.27	428.09	388.63	39.45	10.850	0			
12,100.00	10,077.41	11,457.93	9,649.03	67.32	64.02	-0.27	427.59	387.07	40.52	10.553	0			
12,200.00	10,077.43	11,557.93	9,649.55	70.20	66.89	-0.26	427.09	385.49	41.60	10.265	0			
12,300.00	10,077.45	11,657.93	9,650.07	73.10	69.78	-0.26	426.59	383.88	42.72	9.987	0			
12,400.00	10,077.47	11,757.93	9,650.59	76.00	72.68	-0.26	426.09	382.24	43.85	9.718	0			
12,500.00	10,077.49	11,857.93	9,651.11	78.92	75.59	-0.25	425.59	380.59	45.00	9.458	0			
12,600.00	10,077.51	11,957.93	9,651.63	81.85	78.52	-0.25	425.09	378.93	46.17	9.208	0			
12,700.00	10,077.53	12,057.92	9,652.15	84.78	81.45	-0.25	424.59	377.24	47.35	8.967	0			
12,800.00	10,077.55	12,157.92	9,652.66	87.72	84.38	-0.24	424.10	375.54	48.55	8.735	0			
12,900.00	10,077.57	12,257.92	9,653.18	90.67	87.33	-0.24	423.60	373.83	49.77	8.511	0			
13,000.00	10,077.59	12,357.92	9,653.70	93.63	90.28	-0.24	423.10	372.10	51.00	8.296	0			
13,100.00	10,077.61	12,457.92	9,654.22	96.59	93.24	-0.24	422.60	370.36	52.24	8.090	0			
13,200.00	10,077.63	12,557.92	9,654.74	99.55	96.20	-0.23	422.10	368.61	53.49	7.891	0			
13,300.00	10,077.65	12,657.92	9,655.26	102.52	99.17	-0.23	421.60	366.85	54.75	7.700	0			
13,400.00	10,077.67	12,757.92	9,655.78	105.49	102.14	-0.23	421.10	365.07	56.03	7.516	0			
13,500.00	10,077.69	12,857.92	9,656.30	108.47	105.11	-0.22	420.60	363.29	57.31	7.339	0			
13,600.00	10,077.71	12,957.91	9,656.82	111.45	108.09	-0.22	420.10	361.50	58.60	7.169	0			
13,700.00	10,077.73	13,057.91	9,657.34	114.43	111.07	-0.22	419.60	359.71	59.90	7.005	0			
13,800.00	10,077.75	13,157.91	9,657.86	117.42	114.06	-0.21	419.10	357.90	61.20	6.848	0			
13,900.00	10,077.77	13,257.91	9,658.38	120.40	117.05	-0.21	418.60	356.09	62.52	6.696	0			
14,000.00	10,077.79	13,357.91	9,658.89	123.40	120.04	-0.21	418.11	354.27	63.84	6.549	0			
14,100.00	10,077.81	13,457.91	9,659.41	126.39	123.03	-0.20	417.61	352.44	65.16	6.408	0			
14,200.00	10,077.83	13,557.91	9,659.93	129.38	126.03	-0.20	417.11	350.61	66.50	6.273	0			
14,300.00	10,077.85	13,657.91	9,660.45	132.38	129.02	-0.20	416.61	348.77	67.84	6.141	0			
14,400.00	10,077.87	13,757.90	9,660.97	135.38	132.02	-0.19	416.11	346.93	69.18	6.015	0			
14,500.00	10,077.89	13,857.90	9,661.49	138.38	135.02	-0.19	415.61	345.08	70.53	5.893	0			
14,600.00	10,077.91	13,957.90	9,662.01	141.39	138.03	-0.19	415.11	343.23	71.88	5.775	0			
14,700.00	10,077.93	14,057.90	9,662.53	144.39	141.03	-0.18	414.61	341.38	73.24	5.661	0			
14,800.00	10,077.95	14,157.90	9,663.05	147.40	144.04	-0.18	414.11	339.52	74.60	5.551	0			
14,900.00	10,077.97	14,257.90	9,663.57	150.40	147.04	-0.18	413.61	337.65	75.96	5.445	0			
15,000.00	10,077.99	14,357.90	9,664.09	153.41	150.05	-0.17	413.11	335.78	77.33	5.342	0			
15,100.00	10,078.01	14,457.90	9,664.61	156.42	153.06	-0.17	412.62	333.91	78.70	5.243	0			
15,200.00	10,078.03	14,557.89	9,665.12	159.43	156.07	-0.17	412.12	332.04	80.08	5.146	0			
15,300.00	10,078.05	14,657.89	9,665.64	162.44	159.08	-0.16	411.62	330.16	81.46	5.053	0			
15,400.00	10,078.07	14,757.89	9,666.16	165.46	162.10	-0.16	411.12	328.28	82.84	4.963	0			
15,500.00	10,078.09	14,857.89	9,666.68	168.47	165.11	-0.16	410.62	326.39	84.23	4.875	0			
15,600.00	10,078.11	14,957.89	9,667.20	171.49	168.13	-0.15	410.12	324.51	85.61	4.790	0			

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

Devon Energy

Anticollision Risk Report

Company: WESTERN DIVISION
Project: PBNM
Reference Site: Dzurisin
Site Error: 0.00
Reference Well: Thistle Unit 158H
Well Error: 0.00
Reference Wellbore: Wellbore #1
Reference Design: Plan 1

Local Co-ordinate Reference: Well Thistle Unit 158H
TVD Reference: 1 @ 3713.40ft
MD Reference: 1 @ 3713.40ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM r5000 US Production
Offset TVD Reference: Offset Datum

Offset Design Dzurisin - Thistle Unit 154H - Wellbore #1 - Plan 1														Offset Site Error:	0.00 ft
Survey Program: 0-MWD														Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis		Distance		Minimum Separation		Risked Separation		Probability of Collision		Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Risked Separation Factor	Probability of Collision	Warning		
15,700.00	10,078.13	15,057.89	9,667.72	174.50	171.14	-0.15	409.62	322.62	87.00	4.708	0				
15,800.00	10,078.16	15,157.89	9,668.24	177.52	174.16	-0.15	409.12	320.73	88.40	4.628	0				
15,900.00	10,078.18	15,257.89	9,668.76	180.53	177.18	-0.14	408.62	318.83	89.79	4.551	0				
16,000.00	10,078.20	15,357.88	9,669.28	183.55	180.19	-0.14	408.12	316.94	91.19	4.476	0				
16,100.00	10,078.22	15,457.88	9,669.80	186.57	183.21	-0.14	407.63	315.04	92.59	4.403	0				
16,200.00	10,078.24	15,557.88	9,670.32	189.59	186.23	-0.13	407.13	313.14	93.99	4.332	0				
16,300.00	10,078.26	15,657.88	9,670.84	192.61	189.25	-0.13	406.63	311.24	95.39	4.263	0				
16,400.00	10,078.28	15,757.88	9,671.35	195.63	192.27	-0.13	406.13	309.33	96.80	4.196	0				
16,500.00	10,078.30	15,857.88	9,671.87	198.65	195.30	-0.12	405.63	307.42	98.20	4.130	0				
16,600.00	10,078.32	15,957.88	9,672.39	201.67	198.32	-0.12	405.13	305.52	99.61	4.067	0				
16,700.00	10,078.34	16,057.88	9,672.91	204.70	201.34	-0.12	404.63	303.61	101.02	4.005	0				
16,800.00	10,078.36	16,157.87	9,673.43	207.72	204.36	-0.11	404.13	301.70	102.44	3.945	0				
16,900.00	10,078.38	16,257.87	9,673.95	210.74	207.39	-0.11	403.63	299.78	103.85	3.887	0				
17,000.00	10,078.40	16,357.87	9,674.47	213.77	210.41	-0.11	403.13	297.87	105.26	3.830	0				
17,100.00	10,078.42	16,457.87	9,674.99	216.79	213.44	-0.10	402.63	295.95	106.68	3.774	0				
17,200.00	10,078.44	16,557.87	9,675.51	219.82	216.46	-0.10	402.14	294.04	108.10	3.720	0				
17,300.00	10,078.46	16,657.87	9,676.03	222.84	219.49	-0.10	401.64	292.12	109.52	3.667	0				
17,400.00	10,078.48	16,757.87	9,676.55	225.87	222.51	-0.09	401.14	290.20	110.94	3.616	0				
17,500.00	10,078.50	16,857.87	9,677.07	228.89	225.54	-0.09	400.64	288.28	112.36	3.566	0				
17,600.00	10,078.52	16,957.86	9,677.58	231.92	228.56	-0.09	400.14	286.36	113.78	3.517	0				
17,700.00	10,078.54	17,057.86	9,678.10	234.94	231.59	-0.08	399.64	284.44	115.20	3.469	0				
17,800.00	10,078.56	17,157.86	9,678.62	237.97	234.62	-0.08	399.14	282.51	116.63	3.422	0				
17,900.00	10,078.58	17,257.86	9,679.14	241.00	237.64	-0.08	398.64	280.59	118.05	3.377	0				
18,000.00	10,078.60	17,357.86	9,679.66	244.03	240.67	-0.07	398.14	278.66	119.48	3.332	0				
18,100.00	10,078.62	17,457.86	9,680.18	247.05	243.70	-0.07	397.64	276.73	120.91	3.289	0				
18,200.00	10,078.64	17,557.86	9,680.70	250.08	246.73	-0.07	397.15	274.81	122.34	3.246	0				
18,300.00	10,078.66	17,657.86	9,681.22	253.11	249.76	-0.06	396.65	272.88	123.77	3.205	0				
18,400.00	10,078.68	17,757.85	9,681.74	256.14	252.79	-0.06	396.15	270.95	125.20	3.164	0				
18,500.00	10,078.70	17,857.85	9,682.26	259.17	255.82	-0.05	395.65	269.02	126.63	3.124	0				
18,600.00	10,078.72	17,957.85	9,682.78	262.20	258.84	-0.05	395.15	267.09	128.06	3.086	0				
18,700.00	10,078.74	18,057.85	9,683.30	265.23	261.87	-0.05	394.65	265.16	129.49	3.048	0				
18,800.00	10,078.76	18,157.85	9,683.81	268.26	264.90	-0.04	394.15	263.22	130.93	3.010	0				
18,900.00	10,078.78	18,257.85	9,684.33	271.29	267.93	-0.04	393.65	261.29	132.36	2.974	0				
19,000.00	10,078.80	18,357.85	9,684.85	274.32	270.96	-0.04	393.15	259.36	133.80	2.938	0				
19,100.00	10,078.82	18,457.85	9,685.37	277.35	273.99	-0.03	392.65	257.42	135.23	2.904	0				
19,200.00	10,078.84	18,557.84	9,685.89	280.38	277.03	-0.03	392.15	255.49	136.67	2.869	0				
19,300.00	10,078.86	18,657.84	9,686.41	283.41	280.06	-0.03	391.66	253.55	138.11	2.836	0				
19,400.00	10,078.88	18,757.84	9,686.93	286.44	283.09	-0.02	391.16	251.61	139.54	2.803	0				
19,500.00	10,078.90	18,857.84	9,687.45	289.47	286.12	-0.02	390.66	249.68	140.98	2.771	0				
19,600.00	10,078.92	18,957.84	9,687.97	292.50	289.15	-0.01	390.16	247.74	142.42	2.739	0				
19,700.00	10,078.94	19,057.84	9,688.49	295.53	292.18	-0.01	389.66	245.80	143.86	2.709	0				
19,800.00	10,078.96	19,157.84	9,689.01	298.56	295.21	-0.01	389.16	243.86	145.30	2.678	0				
19,900.00	10,078.98	19,257.84	9,689.53	301.60	298.25	0.00	388.66	241.92	146.74	2.649	0				
19,977.17	10,079.00	19,335.01	9,689.93	303.93	300.51	0.00	388.28	240.42	147.85	2.626	0				
19,993.37	10,079.00	19,349.25	9,690.00	304.42	300.84	0.00	388.20	240.13	148.07	2.622	0				
19,993.43	10,079.00	19,349.25	9,690.00	304.42	300.84	0.00	388.20	240.13	148.07	2.622	0				
19,994.13	10,079.00	19,349.25	9,690.00	304.44	300.84	0.00	388.20	240.13	148.07	2.622	0				

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

Devon Energy
Anticollision Risk Report

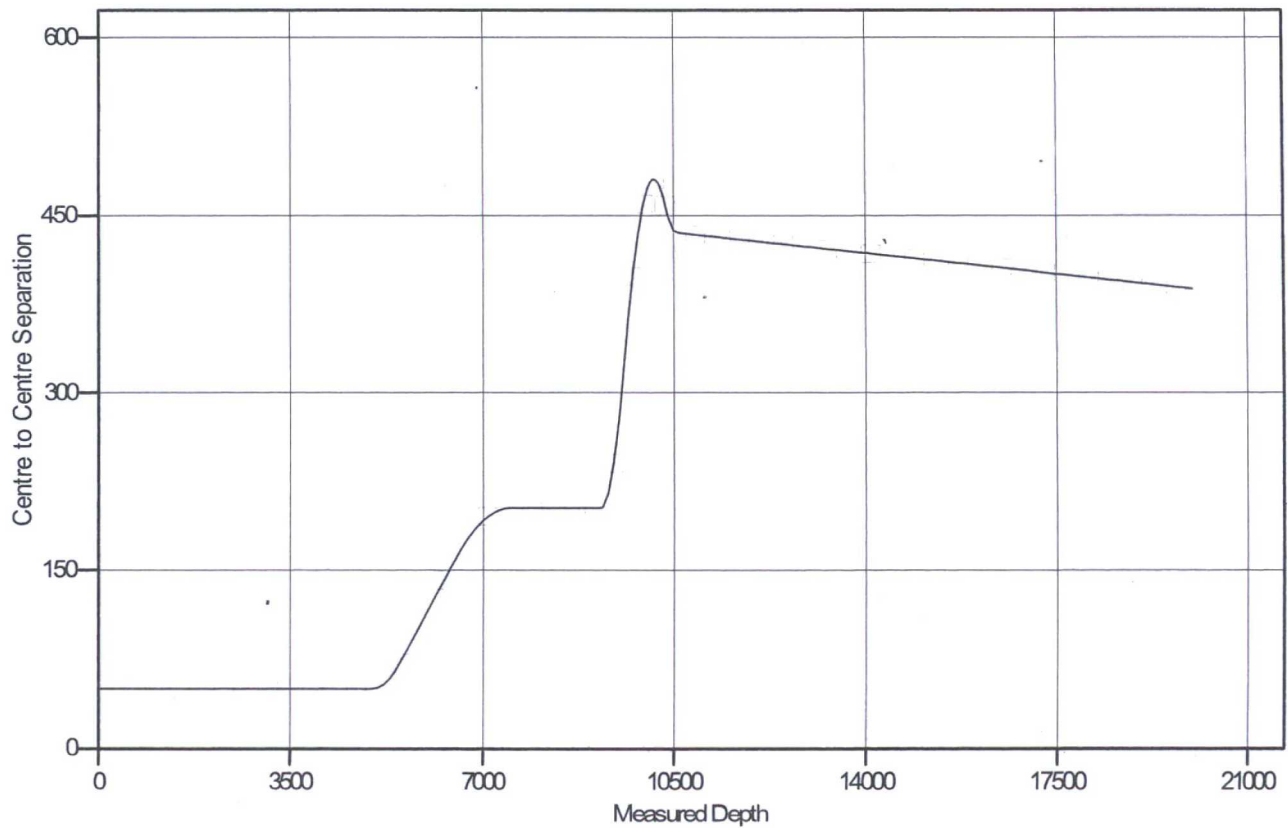
Company: WESTERN DIVISION
Project: PBNM
Reference Site: Dzurisin
Site Error: 0.00
Reference Well: Thistle Unit 158H
Well Error: 0.00
Reference Wellbore: Wellbore #1
Reference Design: Plan 1

Local Co-ordinate Reference: Well Thistle Unit 158H
TVD Reference: 1 @ 3713.40ft
MD Reference: 1 @ 3713.40ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM r5000 US Production
Offset TVD Reference: Offset Datum

Reference Depths are relative to 1 @ 3713.40ft
Offset Depths are relative to Offset Datum
Central Meridian is

Coordinates are relative to: Thistle Unit 158H
Coordinate System is Flat Earth, No Conversions
Grid Convergence at Surface is: 0.00°

Ladder Plot



LEGEND

Thistle Unit 154H, Wellbore #1, Plan 1 V0

Devon Energy
Anticollision Risk Report

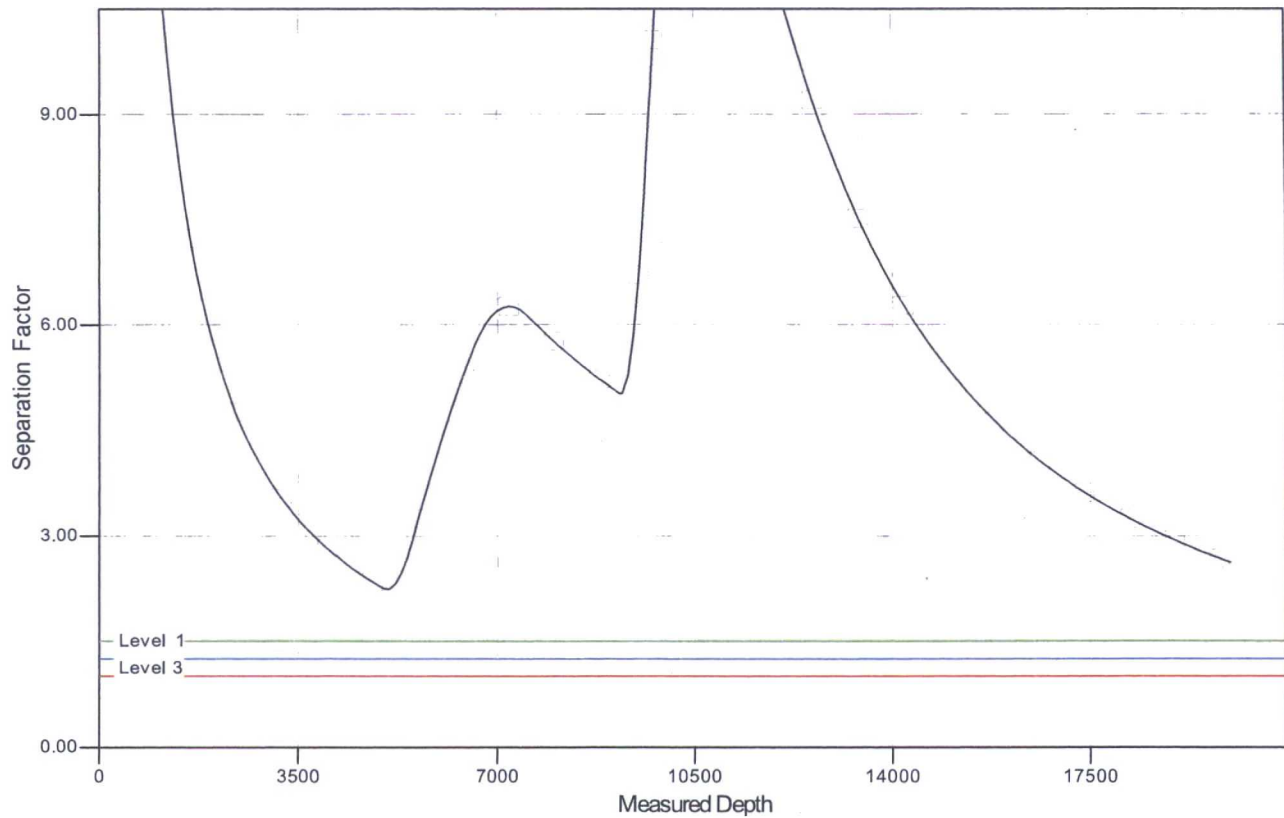
Company: WESTERN DIVISION
Project: PBNM
Reference Site: Dzurisin
Site Error: 0.00
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Well Error: 0.00
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Database: EDM r5000 US Production
Offset TVD Reference: Offset Datum

Reference Depths are relative to 1 @ 3713.40ft
Offset Depths are relative to Offset Datum
Central Meridian is

Coordinates are relative to: Thistle Unit 158H
Coordinate System is Flat Earth, No Conversions
Grid Convergence at Surface is: 0.00°

Separation Factor Plot



LEGEND

Thistle Unit 154H, Wellbore #1, Plan 1 V0