

WESTERN DIVISION

PBNM

Dzurisin

Thistle Unit 155H

Wellbore #1

Plan: Plan 1

Standard Planning Report

01 August, 2016

Devon Energy
Planning Report

Database: EDM r5000 US Production
Company: WESTERN DIVISION
Project: PBNM
Site: Dzurisin
Well: Thistle Unit 155H
Wellbore: Wellbore #1
Design: Plan 1

Local Co-ordinate Reference: Well Thistle Unit 155H
TVD Reference: 1 @ 3676.70ft
MD Reference: 1 @ 3676.70ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project	PBNM		
Map System:	Flat Earth	System Datum:	Mean Sea Level
Geo Datum:	WGS 1984		
Map Zone:	No Conversions		

Site	Dzurisin				
Site Position:		Northing:	429,922.27 usft	Latitude:	0.000000
From:	Map	Easting:	725,391.41 usft	Longitude:	0.000000
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	

Well	Thistle Unit 155H					
Well Position	+N/-S	27,160.41 ft	Northing:	457,082.63 usft	Latitude:	0.000000
	+E/-W	50,418.65 ft	Easting:	775,809.96 usft	Longitude:	0.000000
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	3,653.20 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	User Defined	7/28/2016	(°)	(°)	(nT)
			0.00	0.00	0

Design	Plan 1				
Audit Notes:					
Version:		Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.00	0.00	0.00	357.05	

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,000.00	5.00	290.00	3,999.37	7.46	-20.49	1.00	1.00	0.00	290.00	
7,100.00	5.00	290.00	7,087.57	99.86	-274.38	0.00	0.00	0.00	0.00	
8,100.00	0.00	0.00	8,086.30	114.78	-315.35	0.50	-0.50	0.00	180.00	
9,178.50	0.00	0.00	9,164.80	114.78	-315.35	0.00	0.00	0.00	0.00	
9,928.84	90.04	359.36	9,642.27	592.55	-320.66	12.00	12.00	0.00	359.36	Thistle Unit 155H BHI
9,949.41	90.04	359.36	9,642.25	613.12	-320.89	0.01	0.01	0.00	0.25	
17,065.60	90.04	359.36	9,637.03	7,728.87	-399.97	0.00	0.00	0.00	0.00	
17,104.52	90.04	359.36	9,637.00	7,767.79	-400.40	0.01	-0.01	-0.01	-121.90	Thistle Unit 155H BHI

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North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	1.00	290.00	3,600.00	0.30	-0.82	0.34	1.00	1.00	0.00
3,700.00	2.00	290.00	3,699.96	1.19	-3.28	1.36	1.00	1.00	0.00
3,800.00	3.00	290.00	3,799.86	2.69	-7.38	3.06	1.00	1.00	0.00
3,900.00	4.00	290.00	3,899.68	4.77	-13.12	5.44	1.00	1.00	0.00
4,000.00	5.00	290.00	3,999.37	7.46	-20.49	8.50	1.00	1.00	0.00
4,100.00	5.00	290.00	4,098.99	10.44	-28.68	11.90	0.00	0.00	0.00
4,200.00	5.00	290.00	4,198.60	13.42	-36.87	15.30	0.00	0.00	0.00
4,300.00	5.00	290.00	4,298.22	16.40	-45.06	18.70	0.00	0.00	0.00
4,400.00	5.00	290.00	4,397.84	19.38	-53.25	22.10	0.00	0.00	0.00
4,500.00	5.00	290.00	4,497.46	22.36	-61.44	25.49	0.00	0.00	0.00
4,600.00	5.00	290.00	4,597.08	25.34	-69.63	28.89	0.00	0.00	0.00
4,700.00	5.00	290.00	4,696.70	28.32	-77.82	32.29	0.00	0.00	0.00
4,800.00	5.00	290.00	4,796.32	31.30	-86.01	35.69	0.00	0.00	0.00
4,900.00	5.00	290.00	4,895.94	34.29	-94.20	39.09	0.00	0.00	0.00
5,000.00	5.00	290.00	4,995.56	37.27	-102.39	42.49	0.00	0.00	0.00
5,100.00	5.00	290.00	5,095.18	40.25	-110.58	45.89	0.00	0.00	0.00
5,200.00	5.00	290.00	5,194.80	43.23	-118.77	49.28	0.00	0.00	0.00
5,300.00	5.00	290.00	5,294.42	46.21	-126.96	52.68	0.00	0.00	0.00

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5,400.00	5.00	290.00	5,394.04	49.19	-135.15	56.08	0.00	0.00	0.00
5,500.00	5.00	290.00	5,493.66	52.17	-143.34	59.48	0.00	0.00	0.00
5,600.00	5.00	290.00	5,593.28	55.15	-151.53	62.88	0.00	0.00	0.00
5,700.00	5.00	290.00	5,692.90	58.13	-159.72	66.28	0.00	0.00	0.00
5,800.00	5.00	290.00	5,792.52	61.11	-167.91	69.68	0.00	0.00	0.00
5,900.00	5.00	290.00	5,892.14	64.09	-176.10	73.07	0.00	0.00	0.00
6,000.00	5.00	290.00	5,991.76	67.08	-184.29	76.47	0.00	0.00	0.00
6,100.00	5.00	290.00	6,091.37	70.06	-192.48	79.87	0.00	0.00	0.00
6,200.00	5.00	290.00	6,190.99	73.04	-200.67	83.27	0.00	0.00	0.00
6,300.00	5.00	290.00	6,290.61	76.02	-208.86	86.67	0.00	0.00	0.00
6,400.00	5.00	290.00	6,390.23	79.00	-217.05	90.07	0.00	0.00	0.00
6,500.00	5.00	290.00	6,489.85	81.98	-225.24	93.47	0.00	0.00	0.00
6,600.00	5.00	290.00	6,589.47	84.96	-233.43	96.86	0.00	0.00	0.00
6,700.00	5.00	290.00	6,689.09	87.94	-241.62	100.26	0.00	0.00	0.00
6,800.00	5.00	290.00	6,788.71	90.92	-249.81	103.66	0.00	0.00	0.00
6,900.00	5.00	290.00	6,888.33	93.90	-258.00	107.06	0.00	0.00	0.00
7,000.00	5.00	290.00	6,987.95	96.88	-266.19	110.46	0.00	0.00	0.00
7,100.00	5.00	290.00	7,087.57	99.86	-274.38	113.86	0.00	0.00	0.00
7,200.00	4.50	290.00	7,187.23	102.70	-282.16	117.09	0.50	-0.50	0.00
7,300.00	4.00	290.00	7,286.95	105.23	-289.12	119.98	0.50	-0.50	0.00
7,400.00	3.50	290.00	7,386.74	107.47	-295.27	122.53	0.50	-0.50	0.00
7,500.00	3.00	290.00	7,486.57	109.41	-300.60	124.74	0.50	-0.50	0.00
7,600.00	2.50	290.00	7,586.46	111.05	-305.10	126.61	0.50	-0.50	0.00
7,700.00	2.00	290.00	7,686.38	112.39	-308.79	128.14	0.50	-0.50	0.00
7,800.00	1.50	290.00	7,786.33	113.44	-311.66	129.33	0.50	-0.50	0.00
7,900.00	1.00	290.00	7,886.31	114.18	-313.71	130.18	0.50	-0.50	0.00
8,000.00	0.50	290.00	7,986.30	114.63	-314.94	130.69	0.50	-0.50	0.00
8,100.00	0.00	0.00	8,086.30	114.78	-315.35	130.86	0.50	-0.50	0.00
8,200.00	0.00	0.00	8,186.30	114.78	-315.35	130.86	0.00	0.00	0.00
8,300.00	0.00	0.00	8,286.30	114.78	-315.35	130.86	0.00	0.00	0.00
8,400.00	0.00	0.00	8,386.30	114.78	-315.35	130.86	0.00	0.00	0.00
8,500.00	0.00	0.00	8,486.30	114.78	-315.35	130.86	0.00	0.00	0.00
8,600.00	0.00	0.00	8,586.30	114.78	-315.35	130.86	0.00	0.00	0.00
8,700.00	0.00	0.00	8,686.30	114.78	-315.35	130.86	0.00	0.00	0.00
8,800.00	0.00	0.00	8,786.30	114.78	-315.35	130.86	0.00	0.00	0.00
8,900.00	0.00	0.00	8,886.30	114.78	-315.35	130.86	0.00	0.00	0.00
9,000.00	0.00	0.00	8,986.30	114.78	-315.35	130.86	0.00	0.00	0.00
9,100.00	0.00	0.00	9,086.30	114.78	-315.35	130.86	0.00	0.00	0.00
9,178.50	0.00	0.00	9,164.80	114.78	-315.35	130.86	0.00	0.00	0.00
9,200.00	2.58	359.36	9,186.29	115.26	-315.36	131.34	12.00	12.00	0.00
9,225.00	5.58	359.36	9,211.23	117.04	-315.38	133.12	12.00	12.00	0.00
9,250.00	8.58	359.36	9,236.03	120.12	-315.41	136.20	12.00	12.00	0.00
9,275.00	11.58	359.36	9,260.65	124.50	-315.46	140.57	12.00	12.00	0.00
9,300.00	14.58	359.36	9,284.99	130.15	-315.52	146.22	12.00	12.00	0.00
9,325.00	17.58	359.36	9,309.01	137.08	-315.60	153.14	12.00	12.00	0.00
9,350.00	20.58	359.36	9,332.64	145.25	-315.69	161.31	12.00	12.00	0.00
9,375.00	23.58	359.36	9,355.80	154.64	-315.80	170.70	12.00	12.00	0.00
9,400.00	26.58	359.36	9,378.44	165.24	-315.91	181.28	12.00	12.00	0.00
9,425.00	29.58	359.36	9,400.50	177.00	-316.04	193.04	12.00	12.00	0.00
9,450.00	32.58	359.36	9,421.90	189.91	-316.19	205.93	12.00	12.00	0.00
9,475.00	35.58	359.36	9,442.61	203.91	-316.34	219.93	12.00	12.00	0.00
9,500.00	38.58	359.36	9,462.55	218.98	-316.51	234.99	12.00	12.00	0.00
9,525.00	41.58	359.36	9,481.68	235.08	-316.69	251.07	12.00	12.00	0.00
9,550.00	44.58	359.36	9,499.94	252.15	-316.88	268.13	12.00	12.00	0.00

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Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,575.00	47.58	359.36	9,517.27	270.16	-317.08	286.12	12.00	12.00	0.00
9,600.00	50.58	359.36	9,533.65	289.04	-317.29	304.99	12.00	12.00	0.00
9,625.00	53.58	359.36	9,549.01	308.76	-317.51	324.70	12.00	12.00	0.00
9,650.00	56.58	359.36	9,563.32	329.26	-317.74	345.18	12.00	12.00	0.00
9,675.00	59.58	359.36	9,576.54	350.47	-317.97	366.38	12.00	12.00	0.00
9,700.00	62.58	359.36	9,588.62	372.35	-318.21	388.24	12.00	12.00	0.00
9,725.00	65.58	359.36	9,599.55	394.83	-318.46	410.70	12.00	12.00	0.00
9,750.00	68.58	359.36	9,609.29	417.85	-318.72	433.71	12.00	12.00	0.00
9,775.00	71.58	359.36	9,617.80	441.35	-318.98	457.19	12.00	12.00	0.00
9,800.00	74.58	359.36	9,625.08	465.27	-319.25	481.08	12.00	12.00	0.00
9,825.00	77.58	359.36	9,631.09	489.53	-319.52	505.33	12.00	12.00	0.00
9,850.00	80.58	359.36	9,635.83	514.07	-319.79	529.85	12.00	12.00	0.00
9,875.00	83.58	359.36	9,639.27	538.83	-320.07	554.59	12.00	12.00	0.00
9,900.00	86.58	359.36	9,641.42	563.73	-320.34	579.48	12.00	12.00	0.00
9,925.00	89.58	359.36	9,642.25	588.71	-320.62	604.44	12.00	12.00	0.00
9,928.84	90.04	359.36	9,642.27	592.55	-320.66	608.27	12.00	12.00	0.00
9,949.41	90.04	359.36	9,642.25	613.12	-320.89	628.82	0.01	0.01	0.00
10,000.00	90.04	359.36	9,642.21	663.71	-321.45	679.38	0.00	0.00	0.00
10,100.00	90.04	359.36	9,642.14	763.70	-322.56	779.30	0.00	0.00	0.00
10,200.00	90.04	359.36	9,642.07	863.70	-323.68	879.21	0.00	0.00	0.00
10,300.00	90.04	359.36	9,641.99	963.69	-324.79	979.13	0.00	0.00	0.00
10,400.00	90.04	359.36	9,641.92	1,063.68	-325.90	1,079.05	0.00	0.00	0.00
10,500.00	90.04	359.36	9,641.85	1,163.68	-327.01	1,178.97	0.00	0.00	0.00
10,600.00	90.04	359.36	9,641.77	1,263.67	-328.12	1,278.89	0.00	0.00	0.00
10,700.00	90.04	359.36	9,641.70	1,363.67	-329.23	1,378.81	0.00	0.00	0.00
10,800.00	90.04	359.36	9,641.63	1,463.66	-330.34	1,478.72	0.00	0.00	0.00
10,900.00	90.04	359.36	9,641.55	1,563.65	-331.45	1,578.64	0.00	0.00	0.00
11,000.00	90.04	359.36	9,641.48	1,663.65	-332.57	1,678.56	0.00	0.00	0.00
11,100.00	90.04	359.36	9,641.41	1,763.64	-333.68	1,778.48	0.00	0.00	0.00
11,200.00	90.04	359.36	9,641.33	1,863.63	-334.79	1,878.40	0.00	0.00	0.00
11,300.00	90.04	359.36	9,641.26	1,963.63	-335.90	1,978.32	0.00	0.00	0.00
11,400.00	90.04	359.36	9,641.19	2,063.62	-337.01	2,078.24	0.00	0.00	0.00
11,500.00	90.04	359.36	9,641.11	2,163.62	-338.12	2,178.15	0.00	0.00	0.00
11,600.00	90.04	359.36	9,641.04	2,263.61	-339.23	2,278.07	0.00	0.00	0.00
11,700.00	90.04	359.36	9,640.97	2,363.60	-340.34	2,377.99	0.00	0.00	0.00
11,800.00	90.04	359.36	9,640.89	2,463.60	-341.45	2,477.91	0.00	0.00	0.00
11,900.00	90.04	359.36	9,640.82	2,563.59	-342.57	2,577.83	0.00	0.00	0.00
12,000.00	90.04	359.36	9,640.75	2,663.59	-343.68	2,677.75	0.00	0.00	0.00
12,100.00	90.04	359.36	9,640.67	2,763.58	-344.79	2,777.66	0.00	0.00	0.00
12,200.00	90.04	359.36	9,640.60	2,863.57	-345.90	2,877.58	0.00	0.00	0.00
12,300.00	90.04	359.36	9,640.53	2,963.57	-347.01	2,977.50	0.00	0.00	0.00
12,400.00	90.04	359.36	9,640.45	3,063.56	-348.12	3,077.42	0.00	0.00	0.00
12,500.00	90.04	359.36	9,640.38	3,163.55	-349.23	3,177.34	0.00	0.00	0.00
12,600.00	90.04	359.36	9,640.31	3,263.55	-350.34	3,277.26	0.00	0.00	0.00
12,700.00	90.04	359.36	9,640.23	3,363.54	-351.46	3,377.17	0.00	0.00	0.00
12,800.00	90.04	359.36	9,640.16	3,463.54	-352.57	3,477.09	0.00	0.00	0.00
12,900.00	90.04	359.36	9,640.09	3,563.53	-353.68	3,577.01	0.00	0.00	0.00
13,000.00	90.04	359.36	9,640.01	3,663.52	-354.79	3,676.93	0.00	0.00	0.00
13,100.00	90.04	359.36	9,639.94	3,763.52	-355.90	3,776.85	0.00	0.00	0.00
13,200.00	90.04	359.36	9,639.87	3,863.51	-357.01	3,876.77	0.00	0.00	0.00
13,300.00	90.04	359.36	9,639.79	3,963.50	-358.12	3,976.69	0.00	0.00	0.00
13,400.00	90.04	359.36	9,639.72	4,063.50	-359.23	4,076.60	0.00	0.00	0.00
13,500.00	90.04	359.36	9,639.65	4,163.49	-360.35	4,176.52	0.00	0.00	0.00
13,600.00	90.04	359.36	9,639.57	4,263.49	-361.46	4,276.44	0.00	0.00	0.00

Devon Energy
Planning Report

Database: EDM r5000 US Production
Company: WESTERN DIVISION
Project: PBNM
Site: Dzurisin
Well: Thistle Unit 155H
Wellbore: Wellbore #1
Design: Plan 1

Local Co-ordinate Reference: Well Thistle Unit 155H
TVD Reference: 1 @ 3676.70ft
MD Reference: 1 @ 3676.70ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,700.00	90.04	359.36	9,639.50	4,363.48	-362.57	4,376.36	0.00	0.00	0.00
13,800.00	90.04	359.36	9,639.43	4,463.47	-363.68	4,476.28	0.00	0.00	0.00
13,900.00	90.04	359.36	9,639.35	4,563.47	-364.79	4,576.20	0.00	0.00	0.00
14,000.00	90.04	359.36	9,639.28	4,663.46	-365.90	4,676.11	0.00	0.00	0.00
14,100.00	90.04	359.36	9,639.20	4,763.46	-367.01	4,776.03	0.00	0.00	0.00
14,200.00	90.04	359.36	9,639.13	4,863.45	-368.12	4,875.95	0.00	0.00	0.00
14,300.00	90.04	359.36	9,639.06	4,963.44	-369.24	4,975.87	0.00	0.00	0.00
14,400.00	90.04	359.36	9,638.98	5,063.44	-370.35	5,075.79	0.00	0.00	0.00
14,500.00	90.04	359.36	9,638.91	5,163.43	-371.46	5,175.71	0.00	0.00	0.00
14,600.00	90.04	359.36	9,638.84	5,263.42	-372.57	5,275.62	0.00	0.00	0.00
14,700.00	90.04	359.36	9,638.76	5,363.42	-373.68	5,375.54	0.00	0.00	0.00
14,800.00	90.04	359.36	9,638.69	5,463.41	-374.79	5,475.46	0.00	0.00	0.00
14,900.00	90.04	359.36	9,638.62	5,563.41	-375.90	5,575.38	0.00	0.00	0.00
15,000.00	90.04	359.36	9,638.54	5,663.40	-377.01	5,675.30	0.00	0.00	0.00
15,100.00	90.04	359.36	9,638.47	5,763.39	-378.13	5,775.22	0.00	0.00	0.00
15,200.00	90.04	359.36	9,638.40	5,863.39	-379.24	5,875.14	0.00	0.00	0.00
15,300.00	90.04	359.36	9,638.32	5,963.38	-380.35	5,975.05	0.00	0.00	0.00
15,400.00	90.04	359.36	9,638.25	6,063.37	-381.46	6,074.97	0.00	0.00	0.00
15,500.00	90.04	359.36	9,638.18	6,163.37	-382.57	6,174.89	0.00	0.00	0.00
15,600.00	90.04	359.36	9,638.10	6,263.36	-383.68	6,274.81	0.00	0.00	0.00
15,700.00	90.04	359.36	9,638.03	6,363.36	-384.79	6,374.73	0.00	0.00	0.00
15,800.00	90.04	359.36	9,637.96	6,463.35	-385.90	6,474.65	0.00	0.00	0.00
15,900.00	90.04	359.36	9,637.88	6,563.34	-387.01	6,574.56	0.00	0.00	0.00
16,000.00	90.04	359.36	9,637.81	6,663.34	-388.13	6,674.48	0.00	0.00	0.00
16,100.00	90.04	359.36	9,637.74	6,763.33	-389.24	6,774.40	0.00	0.00	0.00
16,200.00	90.04	359.36	9,637.66	6,863.32	-390.35	6,874.32	0.00	0.00	0.00
16,300.00	90.04	359.36	9,637.59	6,963.32	-391.46	6,974.24	0.00	0.00	0.00
16,400.00	90.04	359.36	9,637.52	7,063.31	-392.57	7,074.16	0.00	0.00	0.00
16,500.00	90.04	359.36	9,637.44	7,163.31	-393.68	7,174.07	0.00	0.00	0.00
16,600.00	90.04	359.36	9,637.37	7,263.30	-394.79	7,273.99	0.00	0.00	0.00
16,700.00	90.04	359.36	9,637.30	7,363.29	-395.90	7,373.91	0.00	0.00	0.00
16,800.00	90.04	359.36	9,637.22	7,463.29	-397.02	7,473.83	0.00	0.00	0.00
16,900.00	90.04	359.36	9,637.15	7,563.28	-398.13	7,573.75	0.00	0.00	0.00
17,000.00	90.04	359.36	9,637.08	7,663.28	-399.24	7,673.67	0.00	0.00	0.00
17,065.60	90.04	359.36	9,637.03	7,728.87	-399.97	7,739.21	0.00	0.00	0.00
17,104.52	90.04	359.36	9,637.00	7,767.79	-400.40	7,778.10	0.01	-0.01	-0.01

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Thistle Unit 155H BHL	0.00	0.00	9,637.00	7,767.79	-400.40	464,850.40	775,409.56	0.000000	0.000000
- plan hits target center									
- Point									



Commitment Runs Deep



Design Plan
Operation and Maintenance Plan
Closure Plan

SENM - Closed Loop Systems
June 2010

I. Design Plan

Devon uses MI SWACO closed loop system (CLS). The MI SWACO CLS is designed to maintain drill solids at or below 5%. The equipment is arranged to progressively remove solids from the largest to the smallest size. Drilling fluids can thus be reused and savings is realized on mud and disposal costs. Dewatering may be required with the centrifuges to insure removal of ultra fine solids.

The drilling location is constructed to allow storm water to flow to a central sump normally the cellar. This insures no contamination leaves the drilling pad in the event of a spill. Storm water is reused in the mud system or stored in a reserve fluid tank farm until it can be reused. All lubricants, oils, or chemicals are removed immediately from the ground to prevent the contamination of storm water. An oil trap is normally installed on the sump if an oil spill occurs during a storm.

A tank farm is utilized to store drilling fluids including fresh water and brine fluids. The tank farm is constructed on a 20 ml plastic lined, bermed pad to prevent the contamination of the drilling site during a spill. Fluids from other sites may be stored in these tanks for processing by the solids control equipment and reused in the mud system. At the end of the well the fluids are transported from the tank farm to an adjoining well or to the next well for the rig.

Prior to installing a closed-loop system on site, the topsoil, if present, will be stripped and stockpiled for use as the final cover or fill at the time of closure.

Signs will be posted on the fence surrounding the closed-loop system unless the closed-loop system is located on a site where there is an existing well, that is operated by Devon.

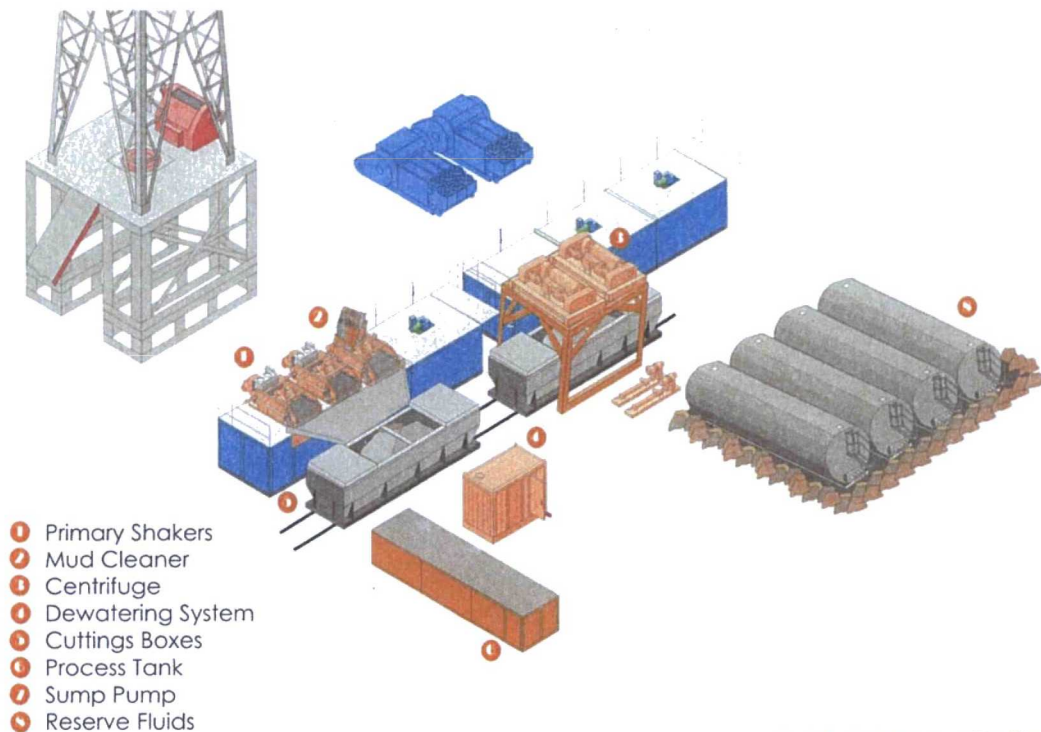
II. Operations and Maintenance Plan

Primary Shakers: The primary shakers make the first removal of drill solids from the drilling mud as it leaves the well bore. The shakers are sized to handle maximum drilling rate at optimal screen size. The shakers normally remove solids down to 74 microns.

Mud Cleaner: The Mud Cleaner cleans the fluid after it leaves the shakers. A set of hydrocyclones are sized to handle 1.25 to 1.5 times the maximum circulating rate. This ensures all the fluid is being processed to an average cut point of 25 microns. The wet discharged is dewatered on a shaker equipped with ultra fine mesh screens and generally cut at 40 microns.



Closed Loop Schematic



Centrifuges: The centrifuges can be one or two in number depending on the well geometry or depth of well. The centrifuges are sized to maintain low gravity solids at 5% or below. They may or may not need a dewatering system to enhance the removal rates. The centrifuges can make a cut point of 8-10 microns depending on bowl speed, feed rate, solids loading and other factors.

The centrifuge system is designed to work on the active system and be flexible to process incoming fluids from other locations. This set-up is also dependant on well factors.

Dewatering System: The dewatering system is a chemical mixing and dosing system designed to enhance the solids removal of the centrifuge. Not commonly used in shallow wells. It may contain pH adjustment, coagulant mixing and dosing, and polymer mixing and dosing. Chemical flocculation binds ultra fine solids into a mass that is within the centrifuge operating design. The

dewatering system improves the centrifuge cut point to infinity or allows for the return of clear water or brine fluid. This ability allows for the ultimate control of low gravity solids.

Cuttings Boxes: Cuttings boxes are utilized to capture drill solids that are discarded from the solids control equipment. These boxes are set upon a rail system that allows for the removal and replacement of a full box of cuttings with an empty one. They are equipped with a cover that insures no product is spilled into the environment during the transportation phase.

Process Tank: (Optional) The process tank allows for the holding and process of fluids that are being transferred into the mud system. Additionally, during times of lost circulation the process tank may hold active fluids that are removed for additional treatment. It can further be used as a mixing tank during well control conditions.

Sump and Sump Pump: The sump is used to collect storm water and the pump is used to transfer this fluid to the active system or to the tank for to hold in reserve. It can also be used to collect fluids that may escape during spills. The location contains drainage ditches that allow the location fluids to drain to the sump.

Reserve Fluids (Tank Farm): A series of frac tanks are used to replace the reserve pit. These are steel tanks that are equipped with a manifold system and a transfer pump. These tanks can contain any number of fluids used during the drilling process. These can include fresh water, cut brine, and saturated salt fluid. The fluid can be from the active well or reclaimed fluid from other locations. A 20 ml liner and berm system is employed to ensure the fluids do not migrate to the environment during a spill.

If a leak develops, the appropriate division district office will be notified within 48 hours of the discovery and the leak will be addressed. Spill prevention is accomplished by maintaining pump packing, hoses, and pipe fittings to insure no leaks are occurring. During an upset condition the source of the spill is isolated and repaired as soon as it is discovered. Free liquid is removed by a diaphragm pump and returned to the mud system. Loose topsoil may be used to stabilize the spill and the contaminated soil is excavated and placed in the cuttings boxes. After the well is finished and the rig has moved, the entire location is scrapped and testing will be performed to determine if a release has occurred.

All trash is kept in a wire mesh enclosure and removed to an approved landfill when full. All spent motor oils are kept in separate containers and they are removed and sent to an approved recycling center. Any spilled lubricants, pipe

dope, or regulated chemicals are removed from soil and sent to landfills approved for these products.

These operations are monitored by Mi Swaco service technicians. Daily logs are maintained to ensure optimal equipment operation and maintenance. Screen and chemical use is logged to maintain inventory control. Fluid properties are monitored and recorded and drilling mud volumes are accounted for in the mud storage farm. This data is kept for end of well review to insure performance goals are met. Lessons learned are logged and used to help with continuous improvement.

A MI SWACO field supervisor manages from 3-5 wells. They are responsible for training personnel, supervising installations, and inspecting sites for compliance of MI SWACO safety and operational policy.

III. Closure Plan

A maximum 340' X 340' caliche pad is built per well. All of the trucks and steel tanks fit on this pad. All fluid cuttings go to the steel tanks to be hauled by various trucking companies to an agency approved disposal.

A multibowl wellhead may be used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested.

Devon proposes using a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 3000 (3M) psi.

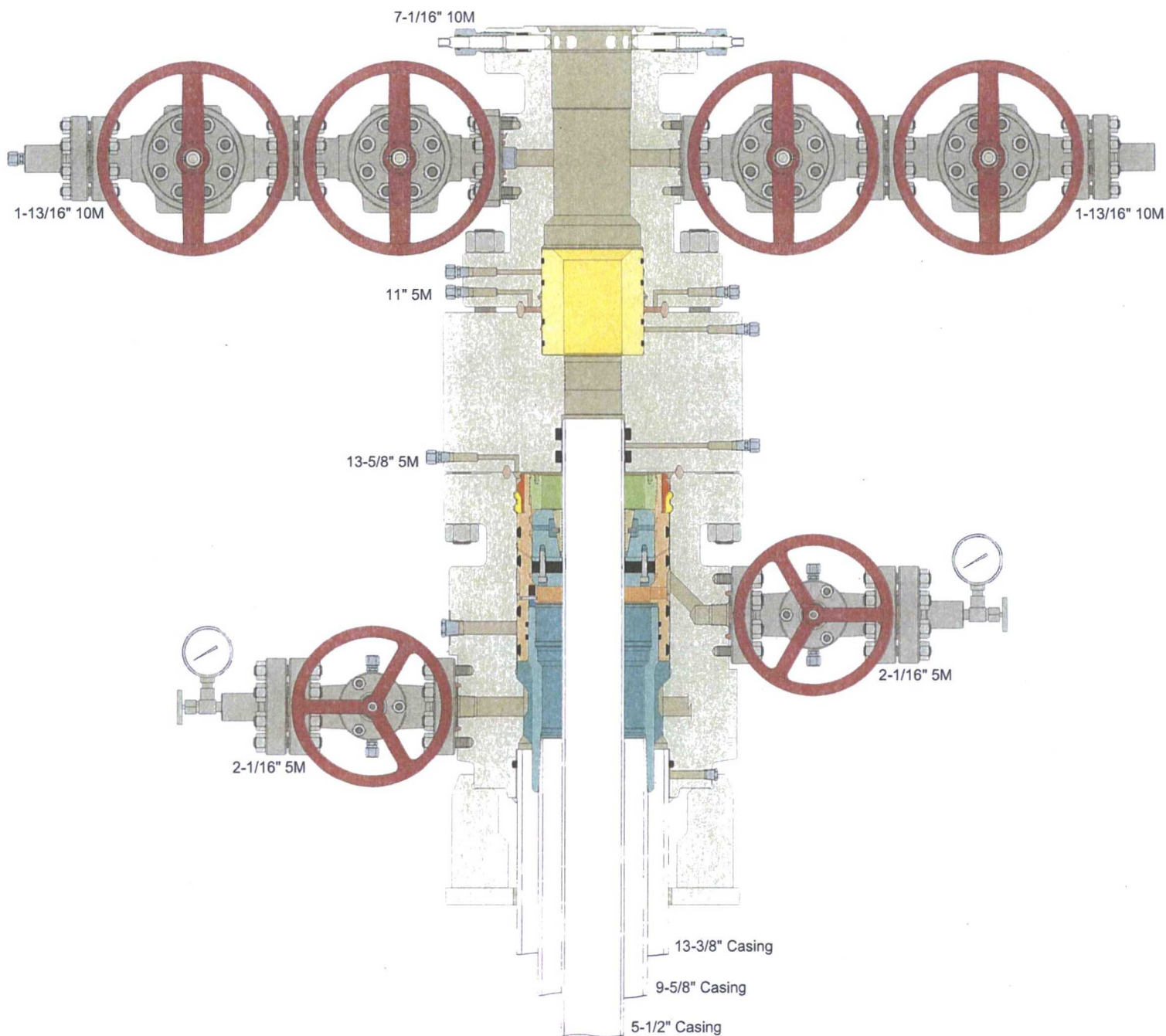
- Wellhead will be installed by wellhead representatives.
- If the welding is performed by a third party, the wellhead representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
- Wellhead representative will install the test plug for the initial BOP test.
- Wellhead company will install a solid steel body pack-off to completely isolate the lower head after cementing intermediate casing. After installation of the pack-off, the pack-off and the lower flange will be tested to 3M, as shown on the attached schematic. Everything above the pack-off will not have been altered whatsoever from the initial nipple up. Therefore the BOP components will not be retested at that time.
- If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head will be cut and top out operations will be conducted.
- Devon will pressure test all seals above and below the mandrel (but still above the casing) to full working pressure rating.
- Devon will test the casing to 0.22 psi/ft or 1500 psi, whichever is greater, as per Onshore Order #2.

After running the 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 3M will be installed on the wellhead system and will undergo a 250 psi low pressure test followed by a 3,000 psi high pressure test. The 3,000 psi high and 250 psi low test will cover testing requirements a maximum of 30 days, as per Onshore Order #2. If the well is not complete within 30 days of this BOP test, another full BOP test will be conducted, as per Onshore Order #2.

After running the 9-5/8" intermediate casing with a mandrel hanger, the 13-5/8" BOP/BOPE system with a minimum rating of 3M will already be installed on the wellhead.

The pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 3,000 psi WP.

Devon's proposed wellhead manufactures will be FMC Technologies, Cactus Wellhead, or Cameron.



Devon Energy

Anticollision Risk Report

Company: WESTERN DIVISION
Project: PBNM
Reference Site: Dzurisin
Site Error: 0.00
Reference Well: Thistle Unit 155H
Well Error: 0.00
Reference Wellbore: Wellbore #1
Reference Design: Plan 1

Local Co-ordinate Reference: Well Thistle Unit 155H
TVD Reference: 1 @ 3676.70ft
MD Reference: 1 @ 3676.70ft
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		
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)	Tool Name	Description
0.00	17,104.52	Plan 1 (Wellbore #1)	MWD	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 159H - Wellbore #1 - Plan 1	3,854.37	3,857.64	49.51	32.64	2.934 CC	
Thistle Unit 159H - Wellbore #1 - Plan 1	4,000.00	4,004.33	49.84	32.40	2.857 ES	
Thistle Unit 159H - Wellbore #1 - Plan 1	4,200.00	4,204.13	51.80	33.50	2.831 SF	

Offset Design											
Dzurisin - Thistle Unit 159H - Wellbore #1 - Plan 1											
Survey Program: 0-MWD											
Offset Site Error: 0.00 ft											
Offset Well Error: 0.00 ft											
Reference Measured Depth (ft)	Vertical Depth (ft)	Offset Measured Depth (ft)	Vertical Depth (ft)	Semi Major Axis Reference (ft)	Offset (ft)	Highside Toolface (°)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Risk of Collision
0.00	0.00	0.30	0.30	0.00	0.00	89.39	49.85	49.85	0.17	288.801	0
100.00	100.00	100.30	100.30	0.09	0.09	89.39	49.85	49.68	0.17	288.801	0
200.00	200.00	200.30	200.30	0.31	0.31	89.39	49.85	49.23	0.62	80.130	0
300.00	300.00	300.30	300.30	0.54	0.54	89.39	49.85	48.78	1.07	46.518	0
400.00	400.00	400.30	400.30	0.76	0.76	89.39	49.85	48.33	1.52	32.772	0
500.00	500.00	500.30	500.30	0.99	0.99	89.39	49.85	47.88	1.97	25.296	0
600.00	600.00	600.30	600.30	1.21	1.21	89.39	49.85	47.43	2.42	20.598	0
700.00	700.00	700.30	700.30	1.43	1.44	89.39	49.85	46.98	2.87	17.371	0
800.00	800.00	800.30	800.30	1.66	1.66	89.39	49.85	46.53	3.32	15.019	0
900.00	900.00	900.30	900.30	1.88	1.88	89.39	49.85	46.08	3.77	13.228	0
1,000.00	1,000.00	1,000.30	1,000.30	2.11	2.11	89.39	49.85	45.63	4.22	11.818	0
1,100.00	1,100.00	1,100.30	1,100.30	2.33	2.33	89.39	49.85	45.18	4.67	10.680	0
1,200.00	1,200.00	1,200.30	1,200.30	2.56	2.56	89.39	49.85	44.74	5.12	9.742	0
1,300.00	1,300.00	1,300.30	1,300.30	2.78	2.78	89.39	49.85	44.29	5.57	8.955	0
1,400.00	1,400.00	1,400.30	1,400.30	3.01	3.01	89.39	49.85	43.84	6.02	8.286	0
1,500.00	1,500.00	1,500.30	1,500.30	3.23	3.23	89.39	49.85	43.39	6.47	7.710	0
1,600.00	1,600.00	1,600.30	1,600.30	3.46	3.46	89.39	49.85	42.94	6.92	7.209	0
1,700.00	1,700.00	1,700.30	1,700.30	3.68	3.68	89.39	49.85	42.49	7.37	6.769	0
1,800.00	1,800.00	1,800.30	1,800.30	3.91	3.91	89.39	49.85	42.04	7.81	6.379	0
1,900.00	1,900.00	1,900.30	1,900.30	4.13	4.13	89.39	49.85	41.59	8.26	6.032	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 155H
Well Error: 0.00
Reference Wellbore: Wellbore #1
Reference Design: Plan 1

Local Co-ordinate Reference: Well Thistle Unit 155H
TVD Reference: 1 @ 3676.70ft
MD Reference: 1 @ 3676.70ft
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 159H - 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 (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	
2,000.00	2,000.00	2,000.30	2,000.30	4.36	4.36	89.39	49.85	41.14	8.71	5.721	0		
2,100.00	2,100.00	2,100.30	2,100.30	4.58	4.58	89.39	49.85	40.69	9.16	5.441	0		
2,200.00	2,200.00	2,200.30	2,200.30	4.81	4.81	89.39	49.85	40.24	9.61	5.186	0		
2,300.00	2,300.00	2,300.30	2,300.30	5.03	5.03	89.39	49.85	39.79	10.06	4.954	0		
2,400.00	2,400.00	2,400.30	2,400.30	5.26	5.26	89.39	49.85	39.34	10.51	4.743	0		
2,500.00	2,500.00	2,500.30	2,500.30	5.48	5.48	89.39	49.85	38.89	10.96	4.548	0		
2,600.00	2,600.00	2,600.30	2,600.30	5.71	5.71	89.39	49.85	38.44	11.41	4.369	0		
2,700.00	2,700.00	2,700.30	2,700.30	5.93	5.93	89.39	49.85	37.99	11.86	4.203	0		
2,800.00	2,800.00	2,800.30	2,800.30	6.15	6.16	89.39	49.85	37.54	12.31	4.050	0		
2,900.00	2,900.00	2,900.30	2,900.30	6.38	6.38	89.39	49.85	37.09	12.76	3.907	0		
3,000.00	3,000.00	3,000.30	3,000.30	6.60	6.60	89.39	49.85	36.64	13.21	3.774	0		
3,100.00	3,100.00	3,100.30	3,100.30	6.83	6.83	89.39	49.85	36.19	13.66	3.650	0		
3,200.00	3,200.00	3,200.30	3,200.30	7.05	7.05	89.39	49.85	35.74	14.11	3.534	0		
3,300.00	3,300.00	3,300.30	3,300.30	7.28	7.28	89.39	49.85	35.30	14.56	3.425	0		
3,400.00	3,400.00	3,400.30	3,400.30	7.50	7.50	89.39	49.85	34.85	15.01	3.322	0		
3,500.00	3,500.00	3,500.30	3,500.30	7.73	7.73	89.39	49.85	34.40	15.46	3.225	0		
3,600.00	3,600.00	3,601.17	3,601.16	7.94	7.94	159.92	49.80	33.92	15.88	3.136	0		
3,700.00	3,699.96	3,702.02	3,701.98	8.16	8.14	161.49	49.67	33.40	16.27	3.052	0		
3,800.00	3,799.86	3,802.84	3,802.70	8.37	8.34	164.13	49.54	32.88	16.66	2.973	0		
3,854.37	3,854.14	3,857.64	3,857.41	8.49	8.46	166.01	49.51	32.64	16.88	2.934	0		CC
3,900.00	3,899.68	3,903.63	3,903.30	8.59	8.55	167.83	49.54	32.49	17.05	2.905	0		
4,000.00	3,999.37	4,004.33	4,003.68	8.82	8.78	172.56	49.84	32.40	17.44	2.857	0		ES
4,100.00	4,098.99	4,104.23	4,103.20	9.06	9.01	177.62	50.63	32.76	17.86	2.834	0		
4,200.00	4,198.60	4,204.13	4,202.72	9.31	9.25	-177.51	51.80	33.50	18.30	2.831	0		SF
4,300.00	4,298.22	4,304.03	4,302.23	9.56	9.50	-172.89	53.32	34.58	18.74	2.845	0		
4,400.00	4,397.84	4,403.92	4,401.75	9.82	9.75	-168.55	55.18	35.97	19.21	2.873	0		
4,500.00	4,497.46	4,503.82	4,501.27	10.09	10.01	-164.51	57.33	37.64	19.69	2.911	0		
4,600.00	4,597.08	4,603.72	4,600.79	10.36	10.27	-160.78	59.74	39.55	20.19	2.959	0		
4,700.00	4,696.70	4,703.62	4,700.31	10.63	10.54	-157.35	62.39	41.68	20.70	3.013	0		
4,800.00	4,796.32	4,803.52	4,799.82	10.91	10.81	-154.21	65.24	44.01	21.23	3.073	0		
4,900.00	4,895.94	4,903.42	4,899.34	11.19	11.09	-151.34	68.27	46.50	21.77	3.136	0		
5,000.00	4,995.56	5,003.31	4,998.86	11.47	11.37	-148.73	71.46	49.13	22.33	3.201	0		
5,100.00	5,095.18	5,103.21	5,098.38	11.76	11.66	-146.33	74.78	51.89	22.89	3.267	0		
5,200.00	5,194.80	5,203.11	5,197.90	12.05	11.94	-144.15	78.22	54.76	23.46	3.334	0		
5,300.00	5,294.42	5,303.01	5,297.42	12.34	12.24	-142.15	81.77	57.72	24.04	3.401	0		
5,400.00	5,394.04	5,402.91	5,396.93	12.64	12.53	-140.32	85.40	60.77	24.63	3.467	0		
5,500.00	5,493.66	5,502.80	5,496.45	12.93	12.83	-138.65	89.12	63.90	25.22	3.533	0		
5,600.00	5,593.28	5,602.70	5,595.97	13.23	13.13	-137.10	92.91	67.08	25.82	3.598	0		
5,700.00	5,692.90	5,702.60	5,695.49	13.54	13.43	-135.68	96.76	70.33	26.43	3.661	0		
5,800.00	5,792.52	5,802.50	5,795.01	13.84	13.74	-134.37	100.66	73.62	27.04	3.723	0		
5,900.00	5,892.14	5,902.40	5,894.52	14.15	14.04	-133.16	104.61	76.96	27.65	3.783	0		
6,000.00	5,991.76	6,002.30	5,994.04	14.46	14.35	-132.03	108.61	80.34	28.27	3.842	0		
6,100.00	6,091.37	6,102.19	6,093.56	14.77	14.66	-130.99	112.65	83.76	28.89	3.899	0		
6,200.00	6,190.99	6,202.09	6,193.08	15.08	14.97	-130.01	116.72	87.20	29.51	3.955	0		
6,300.00	6,290.61	6,301.99	6,292.60	15.39	15.29	-129.11	120.82	90.68	30.14	4.008	0		
6,400.00	6,390.23	6,401.89	6,392.11	15.70	15.60	-128.26	124.95	94.18	30.77	4.061	0		
6,500.00	6,489.85	6,501.79	6,491.63	16.02	15.92	-127.47	129.10	97.70	31.40	4.111	0		
6,600.00	6,589.47	6,601.69	6,591.15	16.34	16.24	-126.73	133.28	101.25	32.03	4.160	0		
6,700.00	6,689.09	6,701.58	6,690.67	16.65	16.56	-126.03	137.48	104.81	32.67	4.208	0		
6,800.00	6,788.71	6,801.48	6,790.19	16.97	16.88	-125.37	141.70	108.39	33.31	4.254	0		
6,900.00	6,888.33	6,901.38	6,889.70	17.29	17.20	-124.76	145.93	111.99	33.95	4.299	0		
7,000.00	6,987.95	7,001.28	6,989.22	17.61	17.52	-124.17	150.19	115.60	34.59	4.342	0		
7,100.00	7,087.57	7,101.18	7,088.74	17.93	17.85	-123.62	154.45	119.22	35.23	4.384	0		
7,200.00	7,187.23	7,201.08	7,188.26	18.19	18.17	-122.98	158.49	122.67	35.83	4.424	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 155H
Well Error: 0.00
Reference Wellbore: Wellbore #1
Reference Design: Plan 1

Local Co-ordinate Reference: Well Thistle Unit 155H
TVD Reference: 1 @ 3676.70ft
MD Reference: 1 @ 3676.70ft
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 159H - 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 (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
7,300.00	7,286.95	7,300.98	7,287.79	18.39	18.50	-122.12	162.09	125.71	36.38	4.456	0		
7,400.00	7,386.74	7,400.88	7,387.31	18.59	18.82	-121.03	165.27	128.34	36.93	4.475	0		
7,500.00	7,486.57	7,500.77	7,486.81	18.79	19.15	-119.73	168.08	130.59	37.49	4.484	0		
7,600.00	7,586.46	7,600.64	7,586.30	18.98	19.48	-118.21	170.56	132.52	38.04	4.484	0		
7,700.00	7,686.38	7,700.47	7,685.76	19.17	19.81	-116.48	172.76	134.17	38.59	4.477	0		
7,800.00	7,786.33	7,800.28	7,785.18	19.35	20.14	-114.53	174.76	135.63	39.13	4.466	0		
7,900.00	7,886.31	7,900.04	7,884.56	19.53	20.47	-112.37	176.63	136.97	39.66	4.454	0		
8,000.00	7,986.30	7,999.75	7,983.89	19.70	20.80	-110.00	178.44	138.28	40.16	4.443	0		
8,100.00	8,086.30	8,099.40	8,083.16	19.86	21.13	-177.42	180.29	139.66	40.64	4.437	0		
8,200.00	8,186.30	8,199.02	8,182.41	20.04	21.46	-174.75	182.40	141.30	41.10	4.438	0		
8,300.00	8,286.30	8,298.64	8,281.65	20.24	21.79	-172.15	184.89	143.34	41.55	4.450	0		
8,400.00	8,386.30	8,398.26	8,380.89	20.44	22.12	-169.63	187.75	145.77	41.98	4.472	0		
8,500.00	8,486.30	8,497.88	8,480.13	20.63	22.46	-167.19	190.97	148.58	42.39	4.505	0		
8,600.00	8,586.30	8,598.20	8,580.11	20.83	22.72	-164.92	194.35	151.61	42.74	4.548	0		
8,700.00	8,686.30	8,698.69	8,680.31	21.03	22.93	-162.96	197.62	154.59	43.03	4.593	0		
8,800.00	8,786.30	8,799.29	8,780.70	21.23	23.12	-161.29	200.69	157.36	43.33	4.632	0		
8,900.00	8,886.30	8,900.00	8,881.25	21.43	23.31	-159.87	203.48	159.84	43.63	4.664	0		
9,000.00	8,986.30	9,000.81	8,981.94	21.63	23.50	-158.71	205.93	161.98	43.95	4.686	0		
9,100.00	9,086.30	9,101.69	9,082.75	21.83	23.69	-157.78	207.99	163.72	44.27	4.698	0		
9,178.50	9,164.80	9,180.93	9,161.94	21.99	23.83	-157.21	209.31	164.77	44.53	4.700	0		
9,200.00	9,186.29	9,202.63	9,183.63	22.03	23.86	-156.45	210.07	165.44	44.62	4.708	0		
9,225.00	9,211.23	9,227.80	9,208.80	22.09	23.91	-156.41	212.03	167.42	44.61	4.753	0		
9,250.00	9,236.03	9,252.84	9,233.83	22.15	23.95	-156.46	215.17	170.63	44.54	4.831	0		
9,275.00	9,260.65	9,277.68	9,258.67	22.21	23.99	-156.60	219.46	175.06	44.40	4.943	0		
9,300.00	9,284.99	9,302.26	9,283.25	22.28	24.04	-156.82	224.92	180.72	44.20	5.089	0		
9,325.00	9,309.01	9,326.51	9,307.49	22.36	24.08	-157.09	231.53	187.61	43.92	5.271	0		
9,350.00	9,332.64	9,350.37	9,331.35	22.44	24.12	-157.41	239.30	195.72	43.59	5.490	0		
9,375.00	9,355.80	9,373.76	9,354.74	22.52	24.16	-157.76	248.22	205.04	43.18	5.748	0		
9,400.00	9,378.44	9,396.63	9,377.61	22.61	24.19	-158.11	258.28	215.57	42.71	6.047	0		
9,425.00	9,400.50	9,418.92	9,399.89	22.71	24.23	-158.46	269.47	227.30	42.18	6.389	0		
9,450.00	9,421.90	9,440.56	9,421.53	22.81	24.26	-158.79	281.77	240.19	41.58	6.776	0		
9,475.00	9,442.61	9,461.49	9,442.46	22.93	24.30	-159.08	295.16	254.23	40.93	7.211	0		
9,500.00	9,462.55	9,481.66	9,462.64	23.05	24.33	-159.32	309.61	269.38	40.23	7.696	0		
9,525.00	9,481.68	9,501.00	9,481.98	23.18	24.36	-159.49	325.08	285.59	39.49	8.232	0		
9,550.00	9,499.94	9,519.26	9,500.24	23.33	24.39	-159.57	341.56	302.84	38.72	8.822	0		
9,575.00	9,517.27	9,536.60	9,517.57	23.49	24.42	-159.54	358.99	321.06	37.93	9.465	0		
9,600.00	9,533.65	9,552.98	9,533.95	23.66	24.45	-159.40	377.33	340.20	37.13	10.162	0		
9,625.00	9,549.01	9,568.34	9,549.31	23.86	24.48	-159.12	396.54	360.19	36.35	10.909	0		
9,650.00	9,563.32	9,627.49	9,608.36	24.07	24.58	-161.39	416.14	380.75	35.39	11.759	0		
9,675.00	9,576.54	9,770.56	9,746.12	24.30	24.77	-165.74	433.07	398.70	34.37	12.601	0		
9,700.00	9,588.62	10,004.46	9,929.82	24.55	25.03	-168.66	443.14	409.45	33.69	13.155	0		
9,725.00	9,599.55	10,284.87	10,031.75	24.83	26.24	-168.54	441.18	407.68	33.50	13.170	0		
9,750.00	9,609.29	10,343.50	10,033.48	25.13	26.85	-168.25	431.76	398.92	32.84	13.149	0		
9,775.00	9,617.80	10,367.01	10,033.52	25.44	27.10	-168.27	423.40	391.32	32.08	13.198	0		
9,800.00	9,625.08	10,390.93	10,033.57	25.78	27.37	-168.29	416.25	384.86	31.40	13.258	0		
9,825.00	9,631.09	10,415.21	10,033.62	26.15	27.69	-168.31	410.35	379.55	30.80	13.321	0		
9,850.00	9,635.83	10,439.76	10,033.67	26.53	28.05	-168.33	405.70	375.39	30.31	13.384	0		
9,875.00	9,639.27	10,464.52	10,033.71	26.93	28.44	-168.36	402.32	372.40	29.92	13.445	0		
9,900.00	9,641.42	10,489.43	10,033.76	27.34	28.83	-168.39	400.21	370.57	29.65	13.500	0		
9,925.00	9,642.25	10,514.41	10,033.81	27.77	29.26	-168.42	399.39	369.89	29.49	13.543	0		
9,928.65	9,642.27	10,518.06	10,033.82	27.84	29.32	-168.43	399.37	369.89	29.48	13.547	0		
9,928.84	9,642.27	10,518.25	10,033.82	27.84	29.33	-168.43	399.37	369.89	29.48	13.548	0		
9,949.41	9,642.25	10,538.82	10,033.86	28.21	29.69	-168.46	399.38	369.78	29.60	13.495	0		
10,000.00	9,642.21	10,589.41	10,033.96	29.15	30.63	-168.55	399.40	369.51	29.89	13.362	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 155H
Well Error: 0.00
Reference Wellbore: Wellbore #1
Reference Design: Plan 1

Local Co-ordinate Reference: Well Thistle Unit 155H
TVD Reference: 1 @ 3676.70ft
MD Reference: 1 @ 3676.70ft
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 159H - 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 (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		
10,100.00	9,642.14	10,689.40	10,034.16	31.17	32.64	-168.71	399.45	368.90	30.55	13.076	0			
10,200.00	9,642.07	10,789.40	10,034.36	33.34	34.81	-168.87	399.50	368.21	31.29	12.768	0			
10,300.00	9,641.99	10,889.39	10,034.55	35.65	37.12	-169.04	399.55	367.45	32.10	12.447	0			
10,400.00	9,641.92	10,989.38	10,034.75	38.06	39.53	-169.20	399.60	366.63	32.98	12.117	0			
10,500.00	9,641.85	11,089.38	10,034.95	40.56	42.02	-169.37	399.66	365.75	33.91	11.785	0			
10,600.00	9,641.77	11,189.37	10,035.15	43.13	44.59	-169.53	399.72	364.83	34.90	11.455	0			
10,700.00	9,641.70	11,289.36	10,035.34	45.76	47.21	-169.70	399.79	363.87	35.92	11.129	0			
10,800.00	9,641.63	11,389.36	10,035.54	48.44	49.88	-169.86	399.86	362.87	36.99	10.811	0			
10,900.00	9,641.55	11,489.35	10,035.74	51.16	52.59	-170.03	399.93	361.85	38.08	10.502	0			
11,000.00	9,641.48	11,589.34	10,035.94	53.91	55.34	-170.19	400.01	360.80	39.21	10.203	0			
11,100.00	9,641.41	11,689.34	10,036.14	56.70	58.11	-170.35	400.08	359.73	40.35	9.915	0			
11,200.00	9,641.33	11,789.33	10,036.33	59.50	60.91	-170.52	400.17	358.65	41.52	9.638	0			
11,300.00	9,641.26	11,889.32	10,036.53	62.33	63.73	-170.68	400.25	357.55	42.70	9.374	0			
11,400.00	9,641.19	11,989.32	10,036.73	65.18	66.57	-170.85	400.34	356.44	43.90	9.120	0			
11,500.00	9,641.11	12,089.31	10,036.93	68.05	69.43	-171.01	400.43	355.33	45.10	8.878	0			
11,600.00	9,641.04	12,189.30	10,037.12	70.93	72.31	-171.17	400.53	354.21	46.32	8.647	0			
11,700.00	9,640.97	12,289.30	10,037.32	73.82	75.19	-171.34	400.62	353.08	47.54	8.427	0			
11,800.00	9,640.89	12,389.29	10,037.52	76.73	78.09	-171.50	400.72	351.96	48.77	8.217	0			
11,900.00	9,640.82	12,489.28	10,037.72	79.64	81.00	-171.67	400.83	350.83	50.00	8.017	0			
12,000.00	9,640.75	12,589.28	10,037.91	82.57	83.92	-171.83	400.94	349.70	51.24	7.825	0			
12,100.00	9,640.67	12,689.27	10,038.11	85.50	86.84	-171.99	401.05	348.58	52.47	7.643	0			
12,200.00	9,640.60	12,789.26	10,038.31	88.44	89.77	-172.16	401.16	347.45	53.71	7.469	0			
12,300.00	9,640.53	12,889.26	10,038.51	91.38	92.71	-172.32	401.28	346.33	54.95	7.303	0			
12,400.00	9,640.45	12,989.25	10,038.70	94.34	95.66	-172.48	401.40	345.21	56.19	7.144	0			
12,500.00	9,640.38	13,089.24	10,038.90	97.29	98.61	-172.65	401.53	344.10	57.43	6.992	0			
12,600.00	9,640.31	13,189.24	10,039.10	100.25	101.57	-172.81	401.65	342.99	58.66	6.847	0			
12,700.00	9,640.23	13,289.23	10,039.30	103.22	104.53	-172.97	401.78	341.89	59.90	6.708	0			
12,800.00	9,640.16	13,389.22	10,039.49	106.19	107.50	-173.13	401.92	340.79	61.13	6.575	0			
12,900.00	9,640.09	13,489.22	10,039.69	109.17	110.47	-173.30	402.06	339.69	62.36	6.447	0			
13,000.00	9,640.01	13,589.21	10,039.89	112.15	113.44	-173.46	402.20	338.60	63.60	6.324	0			
13,100.00	9,639.94	13,689.20	10,040.09	115.13	116.42	-173.62	402.34	337.51	64.82	6.207	0			
13,200.00	9,639.87	13,789.20	10,040.29	118.11	119.40	-173.78	402.49	336.43	66.05	6.093	0			
13,300.00	9,639.79	13,889.19	10,040.48	121.10	122.38	-173.95	402.64	335.36	67.28	5.985	0			
13,400.00	9,639.72	13,989.19	10,040.68	124.09	125.37	-174.11	402.79	334.29	68.50	5.880	0			
13,500.00	9,639.65	14,089.18	10,040.88	127.08	128.36	-174.27	402.95	333.22	69.73	5.779	0			
13,600.00	9,639.57	14,189.17	10,041.08	130.07	131.35	-174.43	403.11	332.16	70.95	5.682	0			
13,700.00	9,639.50	14,289.17	10,041.27	133.07	134.34	-174.59	403.27	331.10	72.17	5.588	0			
13,800.00	9,639.43	14,389.16	10,041.47	136.07	137.34	-174.75	403.44	330.05	73.39	5.497	0			
13,900.00	9,639.35	14,489.15	10,041.67	139.07	140.33	-174.92	403.60	329.00	74.61	5.410	0			
14,000.00	9,639.28	14,589.15	10,041.87	142.07	143.33	-175.08	403.78	327.95	75.83	5.325	0			
14,100.00	9,639.20	14,689.14	10,042.06	145.07	146.33	-175.24	403.95	326.90	77.05	5.243	0			
14,200.00	9,639.13	14,789.13	10,042.26	148.08	149.34	-175.40	404.13	325.86	78.27	5.163	0			
14,300.00	9,639.06	14,889.13	10,042.46	151.09	152.34	-175.56	404.31	324.82	79.49	5.086	0			
14,400.00	9,638.98	14,989.12	10,042.66	154.09	155.34	-175.72	404.50	323.79	80.71	5.012	0			
14,500.00	9,638.91	15,089.11	10,042.85	157.10	158.35	-175.88	404.69	322.75	81.94	4.939	0			
14,600.00	9,638.84	15,189.11	10,043.05	160.11	161.36	-176.04	404.88	321.71	83.17	4.868	0			
14,700.00	9,638.76	15,289.10	10,043.25	163.12	164.37	-176.20	405.07	320.68	84.40	4.800	0			
14,800.00	9,638.69	15,389.09	10,043.45	166.14	167.38	-176.36	405.27	319.64	85.63	4.733	0			
14,900.00	9,638.62	15,489.09	10,043.64	169.15	170.39	-176.52	405.47	318.61	86.86	4.668	0			
15,000.00	9,638.54	15,589.08	10,043.84	172.16	173.40	-176.68	405.68	317.57	88.10	4.605	0			
15,100.00	9,638.47	15,689.07	10,044.04	175.18	176.41	-176.84	405.89	316.54	89.35	4.543	0			
15,200.00	9,638.40	15,789.07	10,044.24	178.19	179.42	-177.00	406.10	315.50	90.60	4.482	0			
15,300.00	9,638.32	15,889.06	10,044.44	181.21	182.44	-177.16	406.31	314.46	91.85	4.424	0			
15,400.00	9,638.25	15,989.05	10,044.63	184.23	185.45	-177.32	406.53	313.41	93.11	4.366	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 155H
Well Error: 0.00
Reference Wellbore: Wellbore #1
Reference Design: Plan 1

Local Co-ordinate Reference: Well Thistle Unit 155H
TVD Reference: 1 @ 3676.70ft
MD Reference: 1 @ 3676.70ft
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 159H - 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 (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	Risk Separation Factor	Probability of Collision		
15,500.00	9,638.18	16,089.05	10,044.83	187.25	188.47	-177.48	406.75	312.37	94.38	4.310	0			
15,600.00	9,638.10	16,189.04	10,045.03	190.26	191.49	-177.64	406.97	311.32	95.65	4.255	0			
15,700.00	9,638.03	16,289.03	10,045.23	193.28	194.50	-177.80	407.20	310.26	96.93	4.201	0			
15,800.00	9,637.96	16,389.03	10,045.42	196.30	197.52	-177.95	407.43	309.20	98.22	4.148	0			
15,900.00	9,637.88	16,489.02	10,045.62	199.32	200.54	-178.11	407.66	308.14	99.52	4.096	0			
16,000.00	9,637.81	16,589.01	10,045.82	202.35	203.56	-178.27	407.89	307.07	100.82	4.046	0			
16,100.00	9,637.74	16,689.01	10,046.02	205.37	206.58	-178.43	408.13	305.99	102.14	3.996	0			
16,200.00	9,637.66	16,789.00	10,046.21	208.39	209.60	-178.59	408.38	304.91	103.46	3.947	0			
16,300.00	9,637.59	16,888.99	10,046.41	211.41	212.62	-178.74	408.62	303.82	104.80	3.899	0			
16,400.00	9,637.52	16,988.99	10,046.61	214.44	215.64	-178.90	408.87	302.73	106.14	3.852	0			
16,500.00	9,637.44	17,088.98	10,046.81	217.46	218.67	-179.06	409.12	301.62	107.50	3.806	0			
16,600.00	9,637.37	17,188.97	10,047.00	220.48	221.69	-179.21	409.37	300.51	108.87	3.760	0			
16,700.00	9,637.30	17,288.97	10,047.20	223.51	224.71	-179.37	409.63	299.38	110.25	3.716	0			
16,800.00	9,637.22	17,388.96	10,047.40	226.53	227.74	-179.53	409.89	298.25	111.64	3.672	0			
16,900.00	9,637.15	17,488.95	10,047.60	229.56	230.76	-179.68	410.15	297.11	113.05	3.628	0			
17,000.00	9,637.08	17,588.95	10,047.79	232.58	233.78	-179.84	410.42	295.96	114.46	3.586	0			
17,065.60	9,637.03	17,654.54	10,047.92	234.57	235.76	-179.94	410.60	295.19	115.40	3.558	0			
17,104.52	9,637.00	17,693.48	10,048.00	235.48	236.88	180.00	410.70	294.74	115.96	3.542	0			

Devon Energy
Anticollision Risk Report

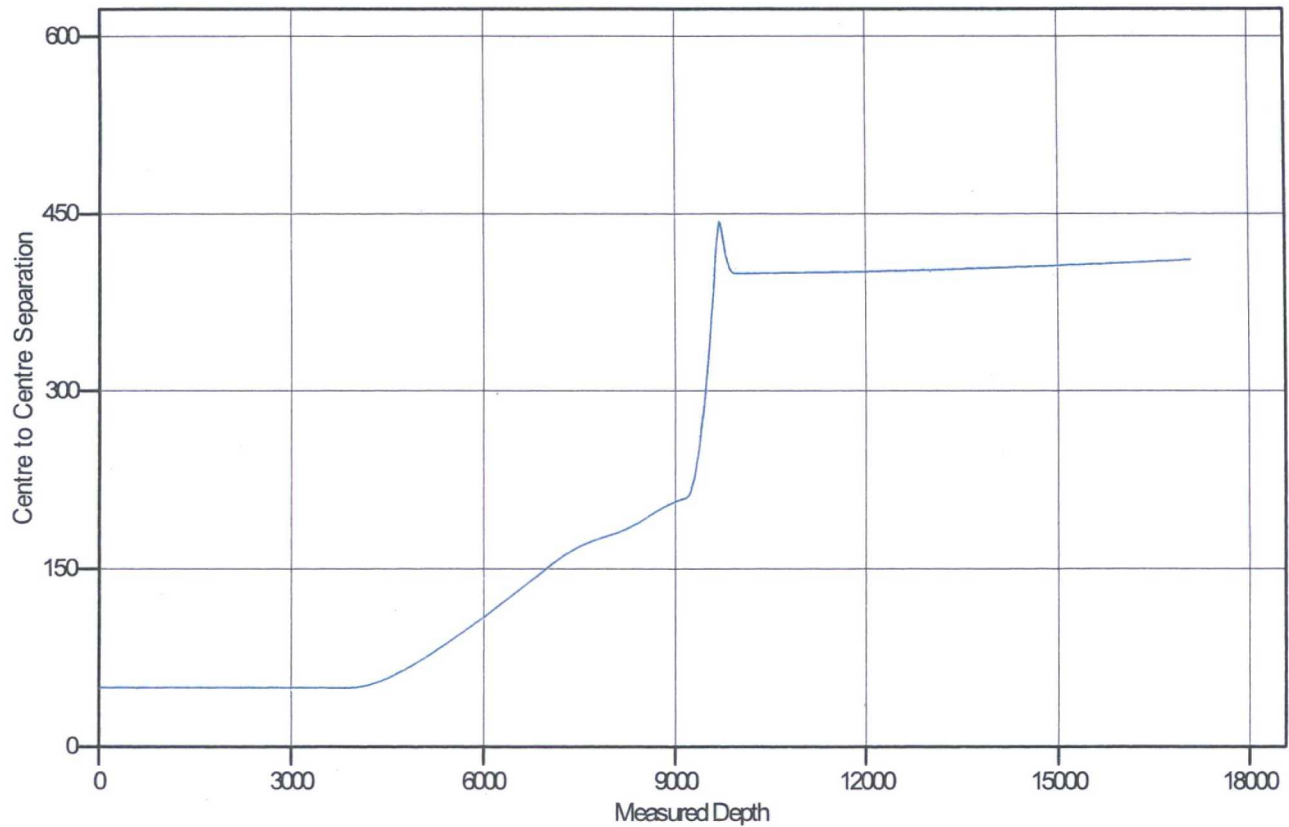
Company: WESTERN DIVISION
Project: PBNM
Reference Site: Dzurisin
Site Error: 0.00
Reference Well: Thistle Unit 155H
Well Error: 0.00
Reference Wellbore: Wellbore #1
Reference Design: Plan 1

Local Co-ordinate Reference: Well Thistle Unit 155H
TVD Reference: 1 @ 3676.70ft
MD Reference: 1 @ 3676.70ft
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 @ 3676.70ft
Offset Depths are relative to Offset Datum
Central Meridian is

Coordinates are relative to: Thistle Unit 155H
Coordinate System is Flat Earth, No Conversions
Grid Convergence at Surface is: 0.00°

Ladder Plot



LEGEND

▲ Thistle Unit 159H, Wellbore #1, Plan 1 V0

Devon Energy
Anticollision Risk Report

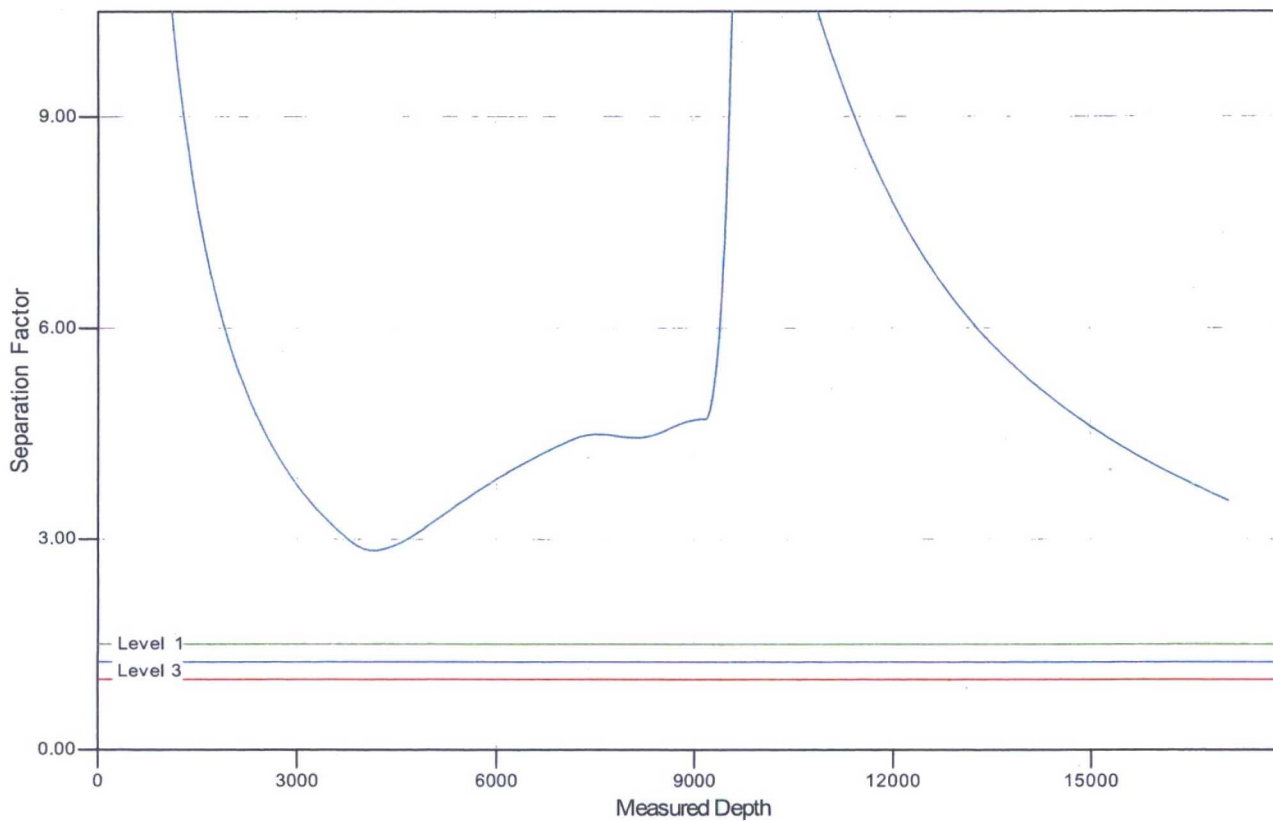
Company: WESTERN DIVISION
Project: PBNM
Reference Site: Dzurisin
Site Error: 0.00
Reference Well: Thistle Unit 155H
Well Error: 0.00
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Local Co-ordinate Reference: Well Thistle Unit 155H
TVD Reference: 1 @ 3676.70ft
MD Reference: 1 @ 3676.70ft
North 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 @ 3676.70ft
Offset Depths are relative to Offset Datum
Central Meridian is

Coordinates are relative to: Thistle Unit 155H
Coordinate System is Flat Earth, No Conversions
Grid Convergence at Surface is: 0.00°

Separation Factor Plot



LEGEND

Thistle Unit 159H, Wellbore #1, Plan 1 V0