

WESTERN DIVISION

PBNM

Dzurisin

Thistle Unit 158H

Wellbore #1

Plan: Plan 1

Standard Planning Report

01 August, 2016

HOBBS OCD
APR 04 2017
RECEIVED

Devon Energy

Planning Report

Database: EDM r5000 US Production
Company: WESTERN DIVISION
Project: PBNM
Site: Dzurisin
Well: Thistle Unit 158H
Wellbore: Wellbore #1
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

HOBBS OCD
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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 158H					
Well Position	+N/-S	37,295.27 ft	Northing:	467,217.46 usft	Latitude:	0.000000
	+E/-W	49,298.82 ft	Easting:	774,690.13 usft	Longitude:	0.000000
Position Uncertainty	0.00 ft		Wellhead Elevation:	0.00 ft	Ground Level:	3,689.90 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	7/28/2016	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	180.62

Plan Sections										
Measured			Vertical			Dogleg	Build	Turn		
Depth	Inclination	Azimuth	Depth	+N/-S	+E/-W	Rate	Rate	Rate	TFO	Target
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(°/100usft)	(°/100usft)	(°/100usft)	(°)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,500.00	5.00	0.00	5,499.37	21.80	0.00	1.00	1.00	0.00	0.00	
6,500.00	5.00	0.00	6,495.56	108.96	0.00	0.00	0.00	0.00	0.00	
7,500.00	0.00	0.00	7,494.29	152.56	0.00	0.50	-0.50	0.00	180.00	
9,000.00	0.00	0.00	8,994.29	152.56	0.00	0.00	0.00	0.00	0.00	
9,605.30	0.00	0.00	9,599.59	152.56	0.00	0.00	0.00	0.00	0.00	
10,355.22	89.99	180.61	10,077.06	-324.79	-5.09	12.00	12.00	0.00	180.61	Thistle Unit 158H BHI
10,370.73	89.99	180.61	10,077.06	-340.30	-5.25	0.01	-0.01	0.00	179.98	
19,977.17	89.99	180.61	10,079.00	-9,946.19	-107.61	0.00	0.00	0.00	0.00	
19,993.43	89.99	180.61	10,079.00	-9,962.46	-107.78	0.01	0.01	0.00	-17.54	Thistle Unit 158H BHI

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 TVD Reference: 1 @ 3713.40ft
 MD Reference: 1 @ 3713.40ft
 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	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	1.00	0.00	5,100.00	0.87	0.00	-0.87	1.00	1.00	0.00
5,200.00	2.00	0.00	5,199.96	3.49	0.00	-3.49	1.00	1.00	0.00
5,300.00	3.00	0.00	5,299.86	7.85	0.00	-7.85	1.00	1.00	0.00

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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)
5,400.00	4.00	0.00	5,399.68	13.96	0.00	-13.96	1.00	1.00	0.00
5,500.00	5.00	0.00	5,499.37	21.80	0.00	-21.80	1.00	1.00	0.00
5,600.00	5.00	0.00	5,598.99	30.52	0.00	-30.52	0.00	0.00	0.00
5,700.00	5.00	0.00	5,698.60	39.23	0.00	-39.23	0.00	0.00	0.00
5,800.00	5.00	0.00	5,798.22	47.95	0.00	-47.95	0.00	0.00	0.00
5,900.00	5.00	0.00	5,897.84	56.67	0.00	-56.66	0.00	0.00	0.00
6,000.00	5.00	0.00	5,997.46	65.38	0.00	-65.38	0.00	0.00	0.00
6,100.00	5.00	0.00	6,097.08	74.10	0.00	-74.09	0.00	0.00	0.00
6,200.00	5.00	0.00	6,196.70	82.81	0.00	-82.81	0.00	0.00	0.00
6,300.00	5.00	0.00	6,296.32	91.53	0.00	-91.52	0.00	0.00	0.00
6,400.00	5.00	0.00	6,395.94	100.24	0.00	-100.24	0.00	0.00	0.00
6,500.00	5.00	0.00	6,495.56	108.96	0.00	-108.95	0.00	0.00	0.00
6,600.00	4.50	0.00	6,595.22	117.24	0.00	-117.23	0.50	-0.50	0.00
6,700.00	4.00	0.00	6,694.94	124.65	0.00	-124.64	0.50	-0.50	0.00
6,800.00	3.50	0.00	6,794.73	131.19	0.00	-131.18	0.50	-0.50	0.00
6,900.00	3.00	0.00	6,894.57	136.86	0.00	-136.85	0.50	-0.50	0.00
7,000.00	2.50	0.00	6,994.45	141.66	0.00	-141.65	0.50	-0.50	0.00
7,100.00	2.00	0.00	7,094.37	145.58	0.00	-145.57	0.50	-0.50	0.00
7,200.00	1.50	0.00	7,194.33	148.64	0.00	-148.63	0.50	-0.50	0.00
7,300.00	1.00	0.00	7,294.30	150.82	0.00	-150.81	0.50	-0.50	0.00
7,400.00	0.50	0.00	7,394.29	152.13	0.00	-152.12	0.50	-0.50	0.00
7,500.00	0.00	0.00	7,494.29	152.56	0.00	-152.56	0.50	-0.50	0.00
7,600.00	0.00	0.00	7,594.29	152.56	0.00	-152.56	0.00	0.00	0.00
7,700.00	0.00	0.00	7,694.29	152.56	0.00	-152.56	0.00	0.00	0.00
7,800.00	0.00	0.00	7,794.29	152.56	0.00	-152.56	0.00	0.00	0.00
7,900.00	0.00	0.00	7,894.29	152.56	0.00	-152.56	0.00	0.00	0.00
8,000.00	0.00	0.00	7,994.29	152.56	0.00	-152.56	0.00	0.00	0.00
8,100.00	0.00	0.00	8,094.29	152.56	0.00	-152.56	0.00	0.00	0.00
8,200.00	0.00	0.00	8,194.29	152.56	0.00	-152.56	0.00	0.00	0.00
8,300.00	0.00	0.00	8,294.29	152.56	0.00	-152.56	0.00	0.00	0.00
8,400.00	0.00	0.00	8,394.29	152.56	0.00	-152.56	0.00	0.00	0.00
8,500.00	0.00	0.00	8,494.29	152.56	0.00	-152.56	0.00	0.00	0.00
8,600.00	0.00	0.00	8,594.29	152.56	0.00	-152.56	0.00	0.00	0.00
8,700.00	0.00	0.00	8,694.29	152.56	0.00	-152.56	0.00	0.00	0.00
8,800.00	0.00	0.00	8,794.29	152.56	0.00	-152.56	0.00	0.00	0.00
8,900.00	0.00	0.00	8,894.29	152.56	0.00	-152.56	0.00	0.00	0.00
9,000.00	0.00	0.00	8,994.29	152.56	0.00	-152.56	0.00	0.00	0.00
9,100.00	0.00	0.00	9,094.29	152.56	0.00	-152.56	0.00	0.00	0.00
9,200.00	0.00	0.00	9,194.29	152.56	0.00	-152.56	0.00	0.00	0.00
9,300.00	0.00	0.00	9,294.29	152.56	0.00	-152.56	0.00	0.00	0.00
9,400.00	0.00	0.00	9,394.29	152.56	0.00	-152.56	0.00	0.00	0.00
9,500.00	0.00	0.00	9,494.29	152.56	0.00	-152.56	0.00	0.00	0.00
9,605.30	0.00	0.00	9,599.59	152.56	0.00	-152.56	0.00	0.00	0.00
9,625.00	2.36	180.61	9,619.29	152.16	0.00	-152.15	12.00	12.00	0.00
9,650.00	5.36	180.61	9,644.23	150.47	-0.02	-150.46	12.00	12.00	0.00
9,675.00	8.36	180.61	9,669.04	147.49	-0.05	-147.48	12.00	12.00	0.00
9,700.00	11.36	180.61	9,693.67	143.20	-0.10	-143.19	12.00	12.00	0.00
9,725.00	14.36	180.61	9,718.04	137.64	-0.16	-137.63	12.00	12.00	0.00
9,750.00	17.36	180.61	9,742.09	130.81	-0.23	-130.80	12.00	12.00	0.00
9,775.00	20.36	180.61	9,765.74	122.72	-0.32	-122.71	12.00	12.00	0.00
9,800.00	23.36	180.61	9,788.94	113.42	-0.42	-113.41	12.00	12.00	0.00
9,825.00	26.36	180.61	9,811.62	102.91	-0.53	-102.89	12.00	12.00	0.00
9,850.00	29.36	180.61	9,833.72	91.22	-0.65	-91.21	12.00	12.00	0.00
9,875.00	32.36	180.61	9,855.18	78.40	-0.79	-78.39	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)
9,900.00	35.36	180.61	9,875.93	64.47	-0.94	-64.46	12.00	12.00	0.00
9,925.00	38.36	180.61	9,895.93	49.48	-1.10	-49.46	12.00	12.00	0.00
9,950.00	41.36	180.61	9,915.12	33.46	-1.27	-33.44	12.00	12.00	0.00
9,975.00	44.36	180.61	9,933.44	16.45	-1.45	-16.44	12.00	12.00	0.00
10,000.00	47.36	180.61	9,950.85	-1.49	-1.64	1.50	12.00	12.00	0.00
10,025.00	50.36	180.61	9,967.29	-20.31	-1.84	20.33	12.00	12.00	0.00
10,050.00	53.36	180.61	9,982.73	-39.97	-2.05	39.99	12.00	12.00	0.00
10,075.00	56.36	180.61	9,997.12	-60.41	-2.27	60.43	12.00	12.00	0.00
10,100.00	59.36	180.61	10,010.41	-81.58	-2.49	81.60	12.00	12.00	0.00
10,125.00	62.36	180.61	10,022.58	-103.41	-2.73	103.44	12.00	12.00	0.00
10,150.00	65.36	180.61	10,033.60	-125.85	-2.97	125.88	12.00	12.00	0.00
10,175.00	68.36	180.61	10,043.42	-148.84	-3.21	148.86	12.00	12.00	0.00
10,200.00	71.36	180.61	10,052.02	-172.31	-3.46	172.33	12.00	12.00	0.00
10,225.00	74.36	180.61	10,059.39	-196.19	-3.72	196.22	12.00	12.00	0.00
10,250.00	77.36	180.61	10,065.49	-220.43	-3.97	220.46	12.00	12.00	0.00
10,275.00	80.36	180.61	10,070.32	-244.96	-4.24	244.99	12.00	12.00	0.00
10,300.00	83.36	180.61	10,073.86	-269.70	-4.50	269.73	12.00	12.00	0.00
10,325.00	86.36	180.61	10,076.10	-294.60	-4.76	294.63	12.00	12.00	0.00
10,350.00	89.36	180.61	10,077.03	-319.57	-5.03	319.61	12.00	12.00	0.00
10,355.22	89.99	180.61	10,077.06	-324.79	-5.09	324.83	12.00	12.00	0.00
10,370.73	89.99	180.61	10,077.06	-340.30	-5.25	340.34	0.01	-0.01	0.00
10,400.00	89.99	180.61	10,077.07	-369.57	-5.56	369.61	0.00	0.00	0.00
10,500.00	89.99	180.61	10,077.09	-469.56	-6.63	469.61	0.00	0.00	0.00
10,600.00	89.99	180.61	10,077.11	-569.56	-7.69	569.61	0.00	0.00	0.00
10,700.00	89.99	180.61	10,077.13	-669.55	-8.76	669.61	0.00	0.00	0.00
10,800.00	89.99	180.61	10,077.15	-769.55	-9.83	769.61	0.00	0.00	0.00
10,900.00	89.99	180.61	10,077.17	-869.54	-10.89	869.61	0.00	0.00	0.00
11,000.00	89.99	180.61	10,077.19	-969.54	-11.96	969.61	0.00	0.00	0.00
11,100.00	89.99	180.61	10,077.21	-1,069.53	-13.02	1,069.61	0.00	0.00	0.00
11,200.00	89.99	180.61	10,077.23	-1,169.53	-14.09	1,169.61	0.00	0.00	0.00
11,300.00	89.99	180.61	10,077.25	-1,269.52	-15.15	1,269.61	0.00	0.00	0.00
11,400.00	89.99	180.61	10,077.27	-1,369.51	-16.22	1,369.61	0.00	0.00	0.00
11,500.00	89.99	180.61	10,077.29	-1,469.51	-17.28	1,469.61	0.00	0.00	0.00
11,600.00	89.99	180.61	10,077.31	-1,569.50	-18.35	1,569.61	0.00	0.00	0.00
11,700.00	89.99	180.61	10,077.33	-1,669.50	-19.41	1,669.61	0.00	0.00	0.00
11,800.00	89.99	180.61	10,077.35	-1,769.49	-20.48	1,769.61	0.00	0.00	0.00
11,900.00	89.99	180.61	10,077.37	-1,869.49	-21.55	1,869.61	0.00	0.00	0.00
12,000.00	89.99	180.61	10,077.39	-1,969.48	-22.61	1,969.61	0.00	0.00	0.00
12,100.00	89.99	180.61	10,077.41	-2,069.47	-23.68	2,069.61	0.00	0.00	0.00
12,200.00	89.99	180.61	10,077.43	-2,169.47	-24.74	2,169.61	0.00	0.00	0.00
12,300.00	89.99	180.61	10,077.45	-2,269.46	-25.81	2,269.61	0.00	0.00	0.00
12,400.00	89.99	180.61	10,077.47	-2,369.46	-26.87	2,369.61	0.00	0.00	0.00
12,500.00	89.99	180.61	10,077.49	-2,469.45	-27.94	2,469.61	0.00	0.00	0.00
12,600.00	89.99	180.61	10,077.51	-2,569.45	-29.00	2,569.61	0.00	0.00	0.00
12,700.00	89.99	180.61	10,077.53	-2,669.44	-30.07	2,669.61	0.00	0.00	0.00
12,800.00	89.99	180.61	10,077.55	-2,769.43	-31.14	2,769.61	0.00	0.00	0.00
12,900.00	89.99	180.61	10,077.57	-2,869.43	-32.20	2,869.61	0.00	0.00	0.00
13,000.00	89.99	180.61	10,077.59	-2,969.42	-33.27	2,969.61	0.00	0.00	0.00
13,100.00	89.99	180.61	10,077.61	-3,069.42	-34.33	3,069.61	0.00	0.00	0.00
13,200.00	89.99	180.61	10,077.63	-3,169.41	-35.40	3,169.61	0.00	0.00	0.00
13,300.00	89.99	180.61	10,077.65	-3,269.41	-36.46	3,269.61	0.00	0.00	0.00
13,400.00	89.99	180.61	10,077.67	-3,369.40	-37.53	3,369.61	0.00	0.00	0.00
13,500.00	89.99	180.61	10,077.69	-3,469.39	-38.59	3,469.61	0.00	0.00	0.00
13,600.00	89.99	180.61	10,077.71	-3,569.39	-39.66	3,569.61	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 158H
Wellbore: Wellbore #1
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

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	89.99	180.61	10,077.73	-3,669.38	-40.72	3,669.61	0.00	0.00	0.00
13,800.00	89.99	180.61	10,077.75	-3,769.38	-41.79	3,769.61	0.00	0.00	0.00
13,900.00	89.99	180.61	10,077.77	-3,869.37	-42.86	3,869.61	0.00	0.00	0.00
14,000.00	89.99	180.61	10,077.79	-3,969.37	-43.92	3,969.61	0.00	0.00	0.00
14,100.00	89.99	180.61	10,077.81	-4,069.36	-44.99	4,069.61	0.00	0.00	0.00
14,200.00	89.99	180.61	10,077.83	-4,169.35	-46.05	4,169.61	0.00	0.00	0.00
14,300.00	89.99	180.61	10,077.85	-4,269.35	-47.12	4,269.61	0.00	0.00	0.00
14,400.00	89.99	180.61	10,077.87	-4,369.34	-48.18	4,369.61	0.00	0.00	0.00
14,500.00	89.99	180.61	10,077.89	-4,469.34	-49.25	4,469.61	0.00	0.00	0.00
14,600.00	89.99	180.61	10,077.91	-4,569.33	-50.31	4,569.61	0.00	0.00	0.00
14,700.00	89.99	180.61	10,077.93	-4,669.33	-51.38	4,669.61	0.00	0.00	0.00
14,800.00	89.99	180.61	10,077.95	-4,769.32	-52.44	4,769.61	0.00	0.00	0.00
14,900.00	89.99	180.61	10,077.97	-4,869.32	-53.51	4,869.61	0.00	0.00	0.00
15,000.00	89.99	180.61	10,077.99	-4,969.31	-54.58	4,969.61	0.00	0.00	0.00
15,100.00	89.99	180.61	10,078.01	-5,069.30	-55.64	5,069.61	0.00	0.00	0.00
15,200.00	89.99	180.61	10,078.03	-5,169.30	-56.71	5,169.61	0.00	0.00	0.00
15,300.00	89.99	180.61	10,078.05	-5,269.29	-57.77	5,269.61	0.00	0.00	0.00
15,400.00	89.99	180.61	10,078.07	-5,369.29	-58.84	5,369.61	0.00	0.00	0.00
15,500.00	89.99	180.61	10,078.09	-5,469.28	-59.90	5,469.61	0.00	0.00	0.00
15,600.00	89.99	180.61	10,078.11	-5,569.28	-60.97	5,569.61	0.00	0.00	0.00
15,700.00	89.99	180.61	10,078.13	-5,669.27	-62.03	5,669.61	0.00	0.00	0.00
15,800.00	89.99	180.61	10,078.16	-5,769.26	-63.10	5,769.61	0.00	0.00	0.00
15,900.00	89.99	180.61	10,078.18	-5,869.26	-64.17	5,869.61	0.00	0.00	0.00
16,000.00	89.99	180.61	10,078.20	-5,969.25	-65.23	5,969.61	0.00	0.00	0.00
16,100.00	89.99	180.61	10,078.22	-6,069.25	-66.30	6,069.61	0.00	0.00	0.00
16,200.00	89.99	180.61	10,078.24	-6,169.24	-67.36	6,169.61	0.00	0.00	0.00
16,300.00	89.99	180.61	10,078.26	-6,269.24	-68.43	6,269.61	0.00	0.00	0.00
16,400.00	89.99	180.61	10,078.28	-6,369.23	-69.49	6,369.61	0.00	0.00	0.00
16,500.00	89.99	180.61	10,078.30	-6,469.22	-70.56	6,469.61	0.00	0.00	0.00
16,600.00	89.99	180.61	10,078.32	-6,569.22	-71.62	6,569.61	0.00	0.00	0.00
16,700.00	89.99	180.61	10,078.34	-6,669.21	-72.69	6,669.61	0.00	0.00	0.00
16,800.00	89.99	180.61	10,078.36	-6,769.21	-73.75	6,769.61	0.00	0.00	0.00
16,900.00	89.99	180.61	10,078.38	-6,869.20	-74.82	6,869.61	0.00	0.00	0.00
17,000.00	89.99	180.61	10,078.40	-6,969.20	-75.89	6,969.61	0.00	0.00	0.00
17,100.00	89.99	180.61	10,078.42	-7,069.19	-76.95	7,069.61	0.00	0.00	0.00
17,200.00	89.99	180.61	10,078.44	-7,169.18	-78.02	7,169.61	0.00	0.00	0.00
17,300.00	89.99	180.61	10,078.46	-7,269.18	-79.08	7,269.61	0.00	0.00	0.00
17,400.00	89.99	180.61	10,078.48	-7,369.17	-80.15	7,369.61	0.00	0.00	0.00
17,500.00	89.99	180.61	10,078.50	-7,469.17	-81.21	7,469.61	0.00	0.00	0.00
17,600.00	89.99	180.61	10,078.52	-7,569.16	-82.28	7,569.61	0.00	0.00	0.00
17,700.00	89.99	180.61	10,078.54	-7,669.16	-83.34	7,669.61	0.00	0.00	0.00
17,800.00	89.99	180.61	10,078.56	-7,769.15	-84.41	7,769.61	0.00	0.00	0.00
17,900.00	89.99	180.61	10,078.58	-7,869.14	-85.48	7,869.61	0.00	0.00	0.00
18,000.00	89.99	180.61	10,078.60	-7,969.14	-86.54	7,969.61	0.00	0.00	0.00
18,100.00	89.99	180.61	10,078.62	-8,069.13	-87.61	8,069.61	0.00	0.00	0.00
18,200.00	89.99	180.61	10,078.64	-8,169.13	-88.67	8,169.61	0.00	0.00	0.00
18,300.00	89.99	180.61	10,078.66	-8,269.12	-89.74	8,269.61	0.00	0.00	0.00
18,400.00	89.99	180.61	10,078.68	-8,369.12	-90.80	8,369.61	0.00	0.00	0.00
18,500.00	89.99	180.61	10,078.70	-8,469.11	-91.87	8,469.61	0.00	0.00	0.00
18,600.00	89.99	180.61	10,078.72	-8,569.11	-92.93	8,569.61	0.00	0.00	0.00
18,700.00	89.99	180.61	10,078.74	-8,669.10	-94.00	8,669.61	0.00	0.00	0.00
18,800.00	89.99	180.61	10,078.76	-8,769.09	-95.06	8,769.61	0.00	0.00	0.00
18,900.00	89.99	180.61	10,078.78	-8,869.09	-96.13	8,869.61	0.00	0.00	0.00
19,000.00	89.99	180.61	10,078.80	-8,969.08	-97.20	8,969.61	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 158H
 Wellbore: Wellbore #1
 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

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)
19,100.00	89.99	180.61	10,078.82	-9,069.08	-98.26	9,069.61	0.00	0.00	0.00
19,200.00	89.99	180.61	10,078.84	-9,169.07	-99.33	9,169.61	0.00	0.00	0.00
19,300.00	89.99	180.61	10,078.86	-9,269.07	-100.39	9,269.61	0.00	0.00	0.00
19,400.00	89.99	180.61	10,078.88	-9,369.06	-101.46	9,369.61	0.00	0.00	0.00
19,500.00	89.99	180.61	10,078.90	-9,469.05	-102.52	9,469.61	0.00	0.00	0.00
19,600.00	89.99	180.61	10,078.92	-9,569.05	-103.59	9,569.61	0.00	0.00	0.00
19,700.00	89.99	180.61	10,078.94	-9,669.04	-104.65	9,669.61	0.00	0.00	0.00
19,800.00	89.99	180.61	10,078.96	-9,769.04	-105.72	9,769.61	0.00	0.00	0.00
19,900.00	89.99	180.61	10,078.98	-9,869.03	-106.78	9,869.61	0.00	0.00	0.00
19,977.17	89.99	180.61	10,079.00	-9,946.19	-107.61	9,946.78	0.00	0.00	0.00
19,993.43	89.99	180.61	10,079.00	-9,962.46	-107.78	9,963.04	0.01	0.01	0.00

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 158H BHL	0.00	0.00	10,079.00	-9,962.46	-107.78	457,255.02	774,582.35	0.000000	0.000000
- plan hits target center									
- Point									

Devon Energy

Anticollision Risk Report

HOCBS OCD
APR 04 2017
RECEIVED

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		
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	19,993.43	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 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												
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 Separation Factor	Probability of Collision
0.00	0.00	0.00	0.00	0.00	0.00	179.61	50.01					0
100.00	100.00	99.20	99.20	0.09	0.09	179.61	50.00	49.83	0.17	291.964	0	0
200.00	200.00	199.20	199.20	0.31	0.31	179.61	50.00	49.38	0.62	80.689	0	0
300.00	300.00	299.20	299.20	0.54	0.53	179.61	50.00	48.93	1.07	46.765	0	0
400.00	400.00	399.20	399.20	0.76	0.76	179.61	50.00	48.48	1.52	32.923	0	0
500.00	500.00	499.20	499.20	0.99	0.98	179.61	50.00	48.03	1.97	25.404	0	0
600.00	600.00	599.20	599.20	1.21	1.21	179.61	50.00	47.58	2.42	20.680	0	0
700.00	700.00	699.20	699.20	1.43	1.43	179.61	50.00	47.13	2.87	17.438	0	0
800.00	800.00	799.20	799.20	1.66	1.66	179.61	50.00	46.68	3.32	15.075	0	0
900.00	900.00	899.20	899.20	1.88	1.88	179.61	50.00	46.23	3.77	13.276	0	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	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	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	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	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	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	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	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	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	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	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	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					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

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							
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	Warning
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 (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	
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													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	
15,700.00	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

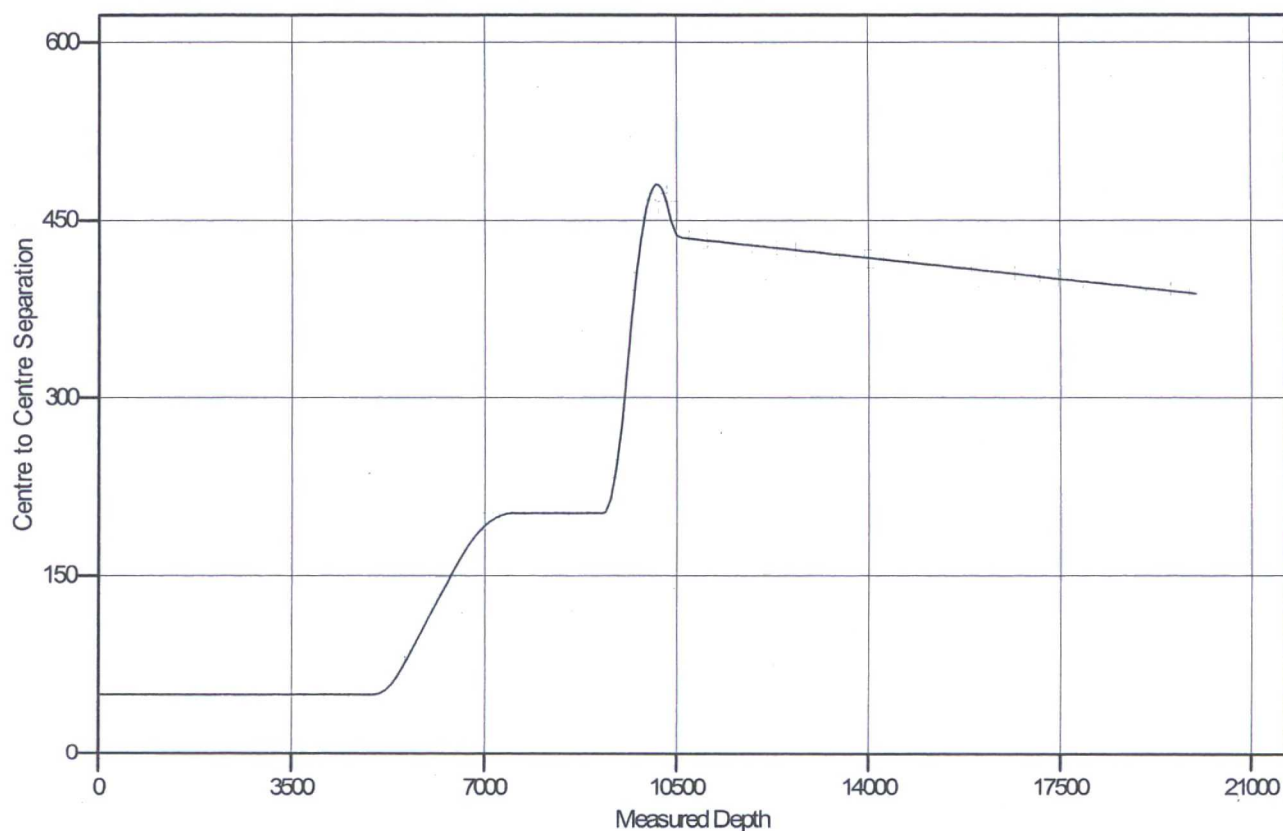
Company: WESTERN DIVISION
Project: PBNM
Reference Site: Dzurisin
Site Error: 0.00
Reference Well: Thistle Unit 158H
Well Error: 0.00
Reference Wellbore: Wellbore #1
Reference Design: Plan 1

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

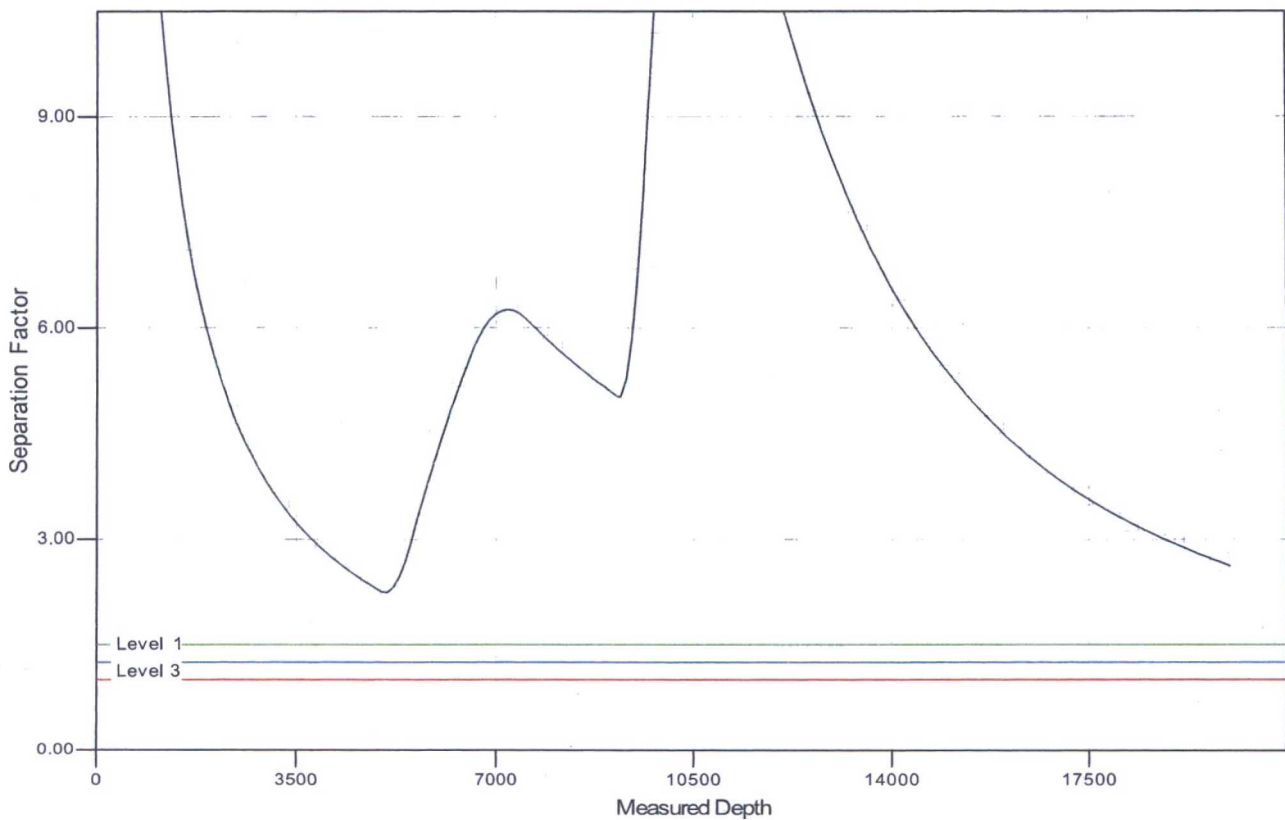
Company: WESTERN DIVISION
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Reference Site: Dzurisin
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Local Co-ordinate Reference: Well Thistle Unit 158H
TVD Reference: 1 @ 3713.40ft
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Offset TVD 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