

WESTERN DIVISION

PBNM

Dzurisin

Thistle Unit 108H

Wellbore #1

Plan: Plan 1

Standard Planning Report

12 July, 2016

HOBBS OCD
MAR 27 2017
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Devon Energy

Planning Report

Database: EDM r5000 US Production
 Company: WESTERN DIVISION
 Project: PBNM
 Site: Dzurisin
 Well: Thistle Unit 108H
 Wellbore: Wellbore #1
 Design: Plan 1

Local Co-ordinate Reference: Well Thistle Unit 108H
 TVD Reference: 1 @ 3747.00ft
 MD Reference: 1 @ 3747.00ft
 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 108H					
Well Position	+N/-S	42,554.21 ft	Northing:	472,476.39 usft	Latitude:	0.000000
	+E/-W	51,398.07 ft	Easting:	776,789.38 usft	Longitude:	0.000000
Position Uncertainty	0.00 ft		Wellhead Elevation:	0.00 ft	Ground Level:	3,723.50 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	User Defined	7/12/2016	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	176.99	

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(ft)	(ft)	Rate	Rate	Rate	(°)	
(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	
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	90.00	3,999.37	0.00	21.80	1.00	1.00	0.00	90.00	
8,000.00	5.00	90.00	7,984.14	0.00	370.43	0.00	0.00	0.00	0.00	
9,000.00	0.00	0.00	8,982.88	0.00	414.03	0.50	-0.50	0.00	180.00	
9,275.00	0.00	0.00	9,257.88	0.00	414.03	0.00	0.00	0.00	0.00	
10,023.92	89.87	180.11	9,735.34	-476.38	413.13	12.00	12.00	0.00	180.11	Thistle Unit 108H BHI
10,060.19	89.87	180.11	9,735.42	-512.66	413.06	0.01	0.01	0.00	-0.06	
17,104.94	89.87	180.11	9,750.91	-7,557.38	399.74	0.00	0.00	0.00	0.00	
17,144.06	89.87	180.11	9,751.00	-7,596.50	399.66	0.01	-0.01	0.00	158.03	Thistle Unit 108H BHI

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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	5.00	90.00	5,394.04	0.00	143.82	7.56	0.00	0.00	0.00
5,500.00	5.00	90.00	5,493.66	0.00	152.54	8.01	0.00	0.00	0.00
5,600.00	5.00	90.00	5,593.28	0.00	161.25	8.47	0.00	0.00	0.00
5,700.00	5.00	90.00	5,692.90	0.00	169.97	8.93	0.00	0.00	0.00
5,800.00	5.00	90.00	5,792.52	0.00	178.68	9.39	0.00	0.00	0.00
5,900.00	5.00	90.00	5,892.14	0.00	187.40	9.85	0.00	0.00	0.00
6,000.00	5.00	90.00	5,991.76	0.00	196.11	10.30	0.00	0.00	0.00
6,100.00	5.00	90.00	6,091.37	0.00	204.83	10.76	0.00	0.00	0.00
6,200.00	5.00	90.00	6,190.99	0.00	213.55	11.22	0.00	0.00	0.00
6,300.00	5.00	90.00	6,290.61	0.00	222.26	11.68	0.00	0.00	0.00
6,400.00	5.00	90.00	6,390.23	0.00	230.98	12.14	0.00	0.00	0.00
6,500.00	5.00	90.00	6,489.85	0.00	239.69	12.59	0.00	0.00	0.00
6,600.00	5.00	90.00	6,589.47	0.00	248.41	13.05	0.00	0.00	0.00
6,700.00	5.00	90.00	6,689.09	0.00	257.12	13.51	0.00	0.00	0.00
6,800.00	5.00	90.00	6,788.71	0.00	265.84	13.97	0.00	0.00	0.00
6,900.00	5.00	90.00	6,888.33	0.00	274.55	14.42	0.00	0.00	0.00
7,000.00	5.00	90.00	6,987.95	0.00	283.27	14.88	0.00	0.00	0.00
7,100.00	5.00	90.00	7,087.57	0.00	291.99	15.34	0.00	0.00	0.00
7,200.00	5.00	90.00	7,187.19	0.00	300.70	15.80	0.00	0.00	0.00
7,300.00	5.00	90.00	7,286.81	0.00	309.42	16.26	0.00	0.00	0.00
7,400.00	5.00	90.00	7,386.43	0.00	318.13	16.71	0.00	0.00	0.00
7,500.00	5.00	90.00	7,486.05	0.00	326.85	17.17	0.00	0.00	0.00
7,600.00	5.00	90.00	7,585.67	0.00	335.56	17.63	0.00	0.00	0.00
7,700.00	5.00	90.00	7,685.29	0.00	344.28	18.09	0.00	0.00	0.00
7,800.00	5.00	90.00	7,784.91	0.00	352.99	18.55	0.00	0.00	0.00
7,900.00	5.00	90.00	7,884.53	0.00	361.71	19.00	0.00	0.00	0.00
8,000.00	5.00	90.00	7,984.14	0.00	370.43	19.46	0.00	0.00	0.00
8,100.00	4.50	90.00	8,083.80	0.00	378.71	19.90	0.50	-0.50	0.00
8,200.00	4.00	90.00	8,183.53	0.00	386.12	20.29	0.50	-0.50	0.00
8,300.00	3.50	90.00	8,283.31	0.00	392.66	20.63	0.50	-0.50	0.00
8,400.00	3.00	90.00	8,383.15	0.00	398.33	20.93	0.50	-0.50	0.00
8,500.00	2.50	90.00	8,483.03	0.00	403.12	21.18	0.50	-0.50	0.00
8,600.00	2.00	90.00	8,582.96	0.00	407.05	21.39	0.50	-0.50	0.00
8,700.00	1.50	90.00	8,682.91	0.00	410.10	21.55	0.50	-0.50	0.00
8,800.00	1.00	90.00	8,782.89	0.00	412.29	21.66	0.50	-0.50	0.00
8,900.00	0.50	90.00	8,882.88	0.00	413.59	21.73	0.50	-0.50	0.00
9,000.00	0.00	0.00	8,982.88	0.00	414.03	21.75	0.50	-0.50	0.00
9,100.00	0.00	0.00	9,082.88	0.00	414.03	21.75	0.00	0.00	0.00
9,200.00	0.00	0.00	9,182.88	0.00	414.03	21.75	0.00	0.00	0.00
9,275.00	0.00	0.00	9,257.88	0.00	414.03	21.75	0.00	0.00	0.00
9,300.00	3.00	180.11	9,282.86	-0.65	414.03	22.41	12.00	12.00	0.00
9,325.00	6.00	180.11	9,307.78	-2.62	414.03	24.36	12.00	12.00	0.00
9,350.00	9.00	180.11	9,332.57	-5.88	414.02	27.62	12.00	12.00	0.00
9,375.00	12.00	180.11	9,357.15	-10.43	414.01	32.17	12.00	12.00	0.00
9,400.00	15.00	180.11	9,381.45	-16.27	414.00	38.00	12.00	12.00	0.00
9,425.00	18.00	180.11	9,405.42	-23.37	413.99	45.09	12.00	12.00	0.00
9,450.00	21.00	180.11	9,428.98	-31.71	413.97	53.42	12.00	12.00	0.00
9,475.00	24.00	180.11	9,452.08	-41.28	413.95	62.97	12.00	12.00	0.00
9,500.00	27.00	180.11	9,474.64	-52.04	413.93	73.72	12.00	12.00	0.00
9,525.00	30.00	180.11	9,496.61	-63.97	413.91	85.63	12.00	12.00	0.00
9,550.00	33.00	180.11	9,517.92	-77.03	413.89	98.67	12.00	12.00	0.00
9,575.00	36.00	180.11	9,538.52	-91.19	413.86	112.80	12.00	12.00	0.00
9,600.00	39.00	180.11	9,558.35	-106.40	413.83	128.00	12.00	12.00	0.00
9,625.00	42.00	180.11	9,577.36	-122.64	413.80	144.21	12.00	12.00	0.00

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MD Reference: 1 @ 3747.00ft
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)
9,650.00	45.00	180.11	9,595.49	-139.85	413.77	161.39	12.00	12.00	0.00
9,675.00	48.00	180.11	9,612.70	-157.98	413.73	179.50	12.00	12.00	0.00
9,700.00	51.00	180.11	9,628.94	-176.99	413.70	198.48	12.00	12.00	0.00
9,725.00	54.00	180.11	9,644.15	-196.82	413.66	218.28	12.00	12.00	0.00
9,750.00	57.00	180.11	9,658.31	-217.42	413.62	238.85	12.00	12.00	0.00
9,775.00	60.00	180.11	9,671.37	-238.73	413.58	260.13	12.00	12.00	0.00
9,800.00	63.00	180.11	9,683.30	-260.70	413.54	282.07	12.00	12.00	0.00
9,825.00	66.00	180.11	9,694.06	-283.26	413.50	304.59	12.00	12.00	0.00
9,850.00	69.00	180.11	9,703.63	-306.36	413.45	327.65	12.00	12.00	0.00
9,875.00	72.00	180.11	9,711.97	-329.92	413.41	351.18	12.00	12.00	0.00
9,900.00	75.00	180.11	9,719.07	-353.89	413.36	375.12	12.00	12.00	0.00
9,925.00	78.00	180.11	9,724.91	-378.19	413.32	399.39	12.00	12.00	0.00
9,950.00	81.00	180.11	9,729.46	-402.77	413.27	423.93	12.00	12.00	0.00
9,975.00	84.00	180.11	9,732.73	-427.55	413.22	448.67	12.00	12.00	0.00
10,000.00	87.00	180.11	9,734.69	-452.47	413.18	473.56	12.00	12.00	0.00
10,023.92	89.87	180.11	9,735.34	-476.38	413.13	497.43	12.00	12.00	0.00
10,060.19	89.87	180.11	9,735.42	-512.66	413.06	533.65	0.01	0.01	0.00
10,100.00	89.87	180.11	9,735.51	-552.46	412.99	573.40	0.00	0.00	0.00
10,200.00	89.87	180.11	9,735.73	-652.46	412.80	673.25	0.00	0.00	0.00
10,300.00	89.87	180.11	9,735.95	-752.46	412.61	773.10	0.00	0.00	0.00
10,400.00	89.87	180.11	9,736.17	-852.46	412.42	872.95	0.00	0.00	0.00
10,500.00	89.87	180.11	9,736.39	-952.46	412.23	972.80	0.00	0.00	0.00
10,600.00	89.87	180.11	9,736.61	-1,052.46	412.04	1,072.66	0.00	0.00	0.00
10,700.00	89.87	180.11	9,736.83	-1,152.46	411.85	1,172.51	0.00	0.00	0.00
10,800.00	89.87	180.11	9,737.05	-1,252.46	411.66	1,272.36	0.00	0.00	0.00
10,900.00	89.87	180.11	9,737.27	-1,352.46	411.47	1,372.21	0.00	0.00	0.00
11,000.00	89.87	180.11	9,737.49	-1,452.46	411.28	1,472.06	0.00	0.00	0.00
11,100.00	89.87	180.11	9,737.71	-1,552.46	411.09	1,571.91	0.00	0.00	0.00
11,200.00	89.87	180.11	9,737.93	-1,652.46	410.91	1,671.76	0.00	0.00	0.00
11,300.00	89.87	180.11	9,738.15	-1,752.46	410.72	1,771.62	0.00	0.00	0.00
11,400.00	89.87	180.11	9,738.37	-1,852.46	410.53	1,871.47	0.00	0.00	0.00
11,500.00	89.87	180.11	9,738.59	-1,952.46	410.34	1,971.32	0.00	0.00	0.00
11,600.00	89.87	180.11	9,738.81	-2,052.46	410.15	2,071.17	0.00	0.00	0.00
11,700.00	89.87	180.11	9,739.03	-2,152.46	409.96	2,171.02	0.00	0.00	0.00
11,800.00	89.87	180.11	9,739.25	-2,252.46	409.77	2,270.87	0.00	0.00	0.00
11,900.00	89.87	180.11	9,739.47	-2,352.46	409.58	2,370.73	0.00	0.00	0.00
12,000.00	89.87	180.11	9,739.69	-2,452.46	409.39	2,470.58	0.00	0.00	0.00
12,100.00	89.87	180.11	9,739.91	-2,552.45	409.20	2,570.43	0.00	0.00	0.00
12,200.00	89.87	180.11	9,740.13	-2,652.45	409.01	2,670.28	0.00	0.00	0.00
12,300.00	89.87	180.11	9,740.35	-2,752.45	408.82	2,770.13	0.00	0.00	0.00
12,400.00	89.87	180.11	9,740.57	-2,852.45	408.64	2,869.98	0.00	0.00	0.00
12,500.00	89.87	180.11	9,740.79	-2,952.45	408.45	2,969.83	0.00	0.00	0.00
12,600.00	89.87	180.11	9,741.01	-3,052.45	408.26	3,069.69	0.00	0.00	0.00
12,700.00	89.87	180.11	9,741.23	-3,152.45	408.07	3,169.54	0.00	0.00	0.00
12,800.00	89.87	180.11	9,741.45	-3,252.45	407.88	3,269.39	0.00	0.00	0.00
12,900.00	89.87	180.11	9,741.67	-3,352.45	407.69	3,369.24	0.00	0.00	0.00
13,000.00	89.87	180.11	9,741.89	-3,452.45	407.50	3,469.09	0.00	0.00	0.00
13,100.00	89.87	180.11	9,742.11	-3,552.45	407.31	3,568.94	0.00	0.00	0.00
13,200.00	89.87	180.11	9,742.33	-3,652.45	407.12	3,668.80	0.00	0.00	0.00
13,300.00	89.87	180.11	9,742.55	-3,752.45	406.93	3,768.65	0.00	0.00	0.00
13,400.00	89.87	180.11	9,742.77	-3,852.45	406.74	3,868.50	0.00	0.00	0.00
13,500.00	89.87	180.11	9,742.99	-3,952.45	406.55	3,968.35	0.00	0.00	0.00
13,600.00	89.87	180.11	9,743.21	-4,052.45	406.37	4,068.20	0.00	0.00	0.00
13,700.00	89.87	180.11	9,743.43	-4,152.45	406.18	4,168.05	0.00	0.00	0.00

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13,800.00	89.87	180.11	9,743.65	-4,252.45	405.99	4,267.90	0.00	0.00	0.00
13,900.00	89.87	180.11	9,743.87	-4,352.45	405.80	4,367.76	0.00	0.00	0.00
14,000.00	89.87	180.11	9,744.09	-4,452.45	405.61	4,467.61	0.00	0.00	0.00
14,100.00	89.87	180.11	9,744.30	-4,552.45	405.42	4,567.46	0.00	0.00	0.00
14,200.00	89.87	180.11	9,744.52	-4,652.45	405.23	4,667.31	0.00	0.00	0.00
14,300.00	89.87	180.11	9,744.74	-4,752.45	405.04	4,767.16	0.00	0.00	0.00
14,400.00	89.87	180.11	9,744.96	-4,852.45	404.85	4,867.01	0.00	0.00	0.00
14,500.00	89.87	180.11	9,745.18	-4,952.44	404.66	4,966.87	0.00	0.00	0.00
14,600.00	89.87	180.11	9,745.40	-5,052.44	404.47	5,066.72	0.00	0.00	0.00
14,700.00	89.87	180.11	9,745.62	-5,152.44	404.28	5,166.57	0.00	0.00	0.00
14,800.00	89.87	180.11	9,745.84	-5,252.44	404.10	5,266.42	0.00	0.00	0.00
14,900.00	89.87	180.11	9,746.06	-5,352.44	403.91	5,366.27	0.00	0.00	0.00
15,000.00	89.87	180.11	9,746.28	-5,452.44	403.72	5,466.12	0.00	0.00	0.00
15,100.00	89.87	180.11	9,746.50	-5,552.44	403.53	5,565.97	0.00	0.00	0.00
15,200.00	89.87	180.11	9,746.72	-5,652.44	403.34	5,665.83	0.00	0.00	0.00
15,300.00	89.87	180.11	9,746.94	-5,752.44	403.15	5,765.68	0.00	0.00	0.00
15,400.00	89.87	180.11	9,747.16	-5,852.44	402.96	5,865.53	0.00	0.00	0.00
15,500.00	89.87	180.11	9,747.38	-5,952.44	402.77	5,965.38	0.00	0.00	0.00
15,600.00	89.87	180.11	9,747.60	-6,052.44	402.58	6,065.23	0.00	0.00	0.00
15,700.00	89.87	180.11	9,747.82	-6,152.44	402.39	6,165.08	0.00	0.00	0.00
15,800.00	89.87	180.11	9,748.04	-6,252.44	402.20	6,264.94	0.00	0.00	0.00
15,900.00	89.87	180.11	9,748.26	-6,352.44	402.01	6,364.79	0.00	0.00	0.00
16,000.00	89.87	180.11	9,748.48	-6,452.44	401.83	6,464.64	0.00	0.00	0.00
16,100.00	89.87	180.11	9,748.70	-6,552.44	401.64	6,564.49	0.00	0.00	0.00
16,200.00	89.87	180.11	9,748.92	-6,652.44	401.45	6,664.34	0.00	0.00	0.00
16,300.00	89.87	180.11	9,749.14	-6,752.44	401.26	6,764.19	0.00	0.00	0.00
16,400.00	89.87	180.11	9,749.36	-6,852.44	401.07	6,864.04	0.00	0.00	0.00
16,500.00	89.87	180.11	9,749.58	-6,952.44	400.88	6,963.90	0.00	0.00	0.00
16,600.00	89.87	180.11	9,749.80	-7,052.44	400.69	7,063.75	0.00	0.00	0.00
16,700.00	89.87	180.11	9,750.02	-7,152.44	400.50	7,163.60	0.00	0.00	0.00
16,800.00	89.87	180.11	9,750.24	-7,252.44	400.31	7,263.45	0.00	0.00	0.00
16,900.00	89.87	180.11	9,750.46	-7,352.43	400.12	7,363.30	0.00	0.00	0.00
17,000.00	89.87	180.11	9,750.68	-7,452.43	399.93	7,463.15	0.00	0.00	0.00
17,104.94	89.87	180.11	9,750.91	-7,557.38	399.74	7,567.94	0.00	0.00	0.00
17,144.06	89.87	180.11	9,751.00	-7,596.50	399.66	7,607.00	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 108H BHL	0.00	0.00	9,751.00	-7,596.50	399.66	464,879.91	777,189.04	0.000000	0.000000
- plan hits target center									
- Point									