



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well DHS3B-23 H15 596
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 6453.0ft (Original Well Elev)
Project:	North Piceance	MD Reference:	WELL @ 6453.0ft (Original Well Elev)
Site:	H15 596 (S15-T5S-96W)	North Reference:	True
Well:	DHS3B-23 H15 596	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Project	North Piceance		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site	H15 596 (S15-T5S-96W)				
Site Position:		Northing:	1,660,371.18 ft	Latitude:	39° 37' 0.09 N
From:	Lat/Long	Easting:	2,254,528.31 ft	Longitude:	108° 8' 47.64 W
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.67 °

Well	DHS3B-23 H15 596					
Well Position	+N/-S	0.0 ft	Northing:	1,660,106.76 ft	Latitude:	39° 36' 57.48 N
	+E/-W	0.0 ft	Easting:	2,254,535.48 ft	Longitude:	108° 8' 47.45 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,431.0 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010	8/23/2011	10.41	65.80	52,273

Design	Plan #1				
Audit Notes:					
Version:	Phase:	PLAN		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	139.17	

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.00	0.00	
704.1	4.16	55.44	704.0	2.1	3.1	4.00	4.00	0.00	55.44	
13,020.4	4.16	55.44	12,987.8	509.5	739.6	0.00	0.00	0.00	0.00	
13,911.1	88.89	148.00	13,561.0	54.7	1,072.1	10.00	9.51	10.39	92.63	DHS3B-23 H15 596 L
19,431.4	88.89	148.00	13,668.0	-4,625.7	3,997.2	0.00	0.00	0.00	0.00	DHS3B-23 H15 596 E

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Site:	H15 596 (S15-T5S-96W)	North Reference:	True
Well:	DHS3B-23 H15 596	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	KOP @ 600'
704.1	4.16	55.44	704.0	2.1	3.1	0.4	4.00	4.00	EOB @ Inc. = 4.16°
800.0	4.16	55.44	799.7	6.1	8.8	1.2	0.00	0.00	
900.0	4.16	55.44	899.4	10.2	14.8	2.0	0.00	0.00	
1,000.0	4.16	55.44	999.1	14.3	20.8	2.8	0.00	0.00	
1,100.0	4.16	55.44	1,098.9	18.5	26.8	3.6	0.00	0.00	
1,200.0	4.16	55.44	1,198.6	22.6	32.8	4.3	0.00	0.00	
1,300.0	4.16	55.44	1,298.3	26.7	38.7	5.1	0.00	0.00	
1,400.0	4.16	55.44	1,398.1	30.8	44.7	5.9	0.00	0.00	
1,500.0	4.16	55.44	1,497.8	34.9	50.7	6.7	0.00	0.00	
1,600.0	4.16	55.44	1,597.5	39.0	56.7	7.5	0.00	0.00	
1,700.0	4.16	55.44	1,697.3	43.2	62.7	8.3	0.00	0.00	
1,800.0	4.16	55.44	1,797.0	47.3	68.6	9.1	0.00	0.00	
1,900.0	4.16	55.44	1,896.8	51.4	74.6	9.9	0.00	0.00	
2,000.0	4.16	55.44	1,996.5	55.5	80.6	10.7	0.00	0.00	
2,100.0	4.16	55.44	2,096.2	59.6	86.6	11.5	0.00	0.00	
2,200.0	4.16	55.44	2,196.0	63.8	92.6	12.3	0.00	0.00	
2,300.0	4.16	55.44	2,295.7	67.9	98.5	13.1	0.00	0.00	
2,400.0	4.16	55.44	2,395.4	72.0	104.5	13.9	0.00	0.00	
2,500.0	4.16	55.44	2,495.2	76.1	110.5	14.7	0.00	0.00	
2,600.0	4.16	55.44	2,594.9	80.2	116.5	15.5	0.00	0.00	
2,700.0	4.16	55.44	2,694.6	84.4	122.5	16.2	0.00	0.00	
2,800.0	4.16	55.44	2,794.4	88.5	128.4	17.0	0.00	0.00	
2,900.0	4.16	55.44	2,894.1	92.6	134.4	17.8	0.00	0.00	
3,000.0	4.16	55.44	2,993.8	96.7	140.4	18.6	0.00	0.00	
3,100.0	4.16	55.44	3,093.6	100.8	146.4	19.4	0.00	0.00	
3,200.0	4.16	55.44	3,193.3	105.0	152.4	20.2	0.00	0.00	
3,300.0	4.16	55.44	3,293.1	109.1	158.3	21.0	0.00	0.00	
3,400.0	4.16	55.44	3,392.8	113.2	164.3	21.8	0.00	0.00	
3,500.0	4.16	55.44	3,492.5	117.3	170.3	22.6	0.00	0.00	
3,600.0	4.16	55.44	3,592.3	121.4	176.3	23.4	0.00	0.00	
3,700.0	4.16	55.44	3,692.0	125.6	182.3	24.2	0.00	0.00	
3,800.0	4.16	55.44	3,791.7	129.7	188.2	25.0	0.00	0.00	
3,900.0	4.16	55.44	3,891.5	133.8	194.2	25.8	0.00	0.00	
4,000.0	4.16	55.44	3,991.2	137.9	200.2	26.6	0.00	0.00	
4,100.0	4.16	55.44	4,090.9	142.0	206.2	27.4	0.00	0.00	
4,200.0	4.16	55.44	4,190.7	146.1	212.2	28.1	0.00	0.00	
4,300.0	4.16	55.44	4,290.4	150.3	218.1	28.9	0.00	0.00	
4,400.0	4.16	55.44	4,390.2	154.4	224.1	29.7	0.00	0.00	
4,500.0	4.16	55.44	4,489.9	158.5	230.1	30.5	0.00	0.00	
4,600.0	4.16	55.44	4,589.6	162.6	236.1	31.3	0.00	0.00	
4,700.0	4.16	55.44	4,689.4	166.7	242.1	32.1	0.00	0.00	
4,800.0	4.16	55.44	4,789.1	170.9	248.0	32.9	0.00	0.00	
4,900.0	4.16	55.44	4,888.8	175.0	254.0	33.7	0.00	0.00	
5,000.0	4.16	55.44	4,988.6	179.1	260.0	34.5	0.00	0.00	
5,100.0	4.16	55.44	5,088.3	183.2	266.0	35.3	0.00	0.00	

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Well:	DHS3B-23 H15 596	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
5,200.0	4.16	55.44	5,188.0	187.3	272.0	36.1	0.00	0.00	
5,300.0	4.16	55.44	5,287.8	191.5	277.9	36.9	0.00	0.00	
5,400.0	4.16	55.44	5,387.5	195.6	283.9	37.7	0.00	0.00	
5,500.0	4.16	55.44	5,487.2	199.7	289.9	38.5	0.00	0.00	
5,576.0	4.16	55.44	5,563.0	202.8	294.5	39.1	0.00	0.00	Williams Fork
5,600.0	4.16	55.44	5,587.0	203.8	295.9	39.2	0.00	0.00	
5,700.0	4.16	55.44	5,686.7	207.9	301.9	40.0	0.00	0.00	
5,800.0	4.16	55.44	5,786.5	212.1	307.8	40.8	0.00	0.00	
5,900.0	4.16	55.44	5,886.2	216.2	313.8	41.6	0.00	0.00	
6,000.0	4.16	55.44	5,985.9	220.3	319.8	42.4	0.00	0.00	
6,100.0	4.16	55.44	6,085.7	224.4	325.8	43.2	0.00	0.00	
6,200.0	4.16	55.44	6,185.4	228.5	331.8	44.0	0.00	0.00	
6,300.0	4.16	55.44	6,285.1	232.6	337.7	44.8	0.00	0.00	
6,400.0	4.16	55.44	6,384.9	236.8	343.7	45.6	0.00	0.00	
6,500.0	4.16	55.44	6,484.6	240.9	349.7	46.4	0.00	0.00	
6,600.0	4.16	55.44	6,584.3	245.0	355.7	47.2	0.00	0.00	
6,700.0	4.16	55.44	6,684.1	249.1	361.7	48.0	0.00	0.00	
6,800.0	4.16	55.44	6,783.8	253.2	367.6	48.8	0.00	0.00	
6,900.0	4.16	55.44	6,883.6	257.4	373.6	49.6	0.00	0.00	
7,000.0	4.16	55.44	6,983.3	261.5	379.6	50.4	0.00	0.00	
7,100.0	4.16	55.44	7,083.0	265.6	385.6	51.1	0.00	0.00	
7,200.0	4.16	55.44	7,182.8	269.7	391.6	51.9	0.00	0.00	
7,300.0	4.16	55.44	7,282.5	273.8	397.5	52.7	0.00	0.00	
7,400.0	4.16	55.44	7,382.2	278.0	403.5	53.5	0.00	0.00	
7,500.0	4.16	55.44	7,482.0	282.1	409.5	54.3	0.00	0.00	
7,600.0	4.16	55.44	7,581.7	286.2	415.5	55.1	0.00	0.00	
7,700.0	4.16	55.44	7,681.4	290.3	421.5	55.9	0.00	0.00	
7,800.0	4.16	55.44	7,781.2	294.4	427.4	56.7	0.00	0.00	
7,900.0	4.16	55.44	7,880.9	298.6	433.4	57.5	0.00	0.00	
8,000.0	4.16	55.44	7,980.6	302.7	439.4	58.3	0.00	0.00	
8,100.0	4.16	55.44	8,080.4	306.8	445.4	59.1	0.00	0.00	
8,200.0	4.16	55.44	8,180.1	310.9	451.4	59.9	0.00	0.00	
8,300.0	4.16	55.44	8,279.9	315.0	457.3	60.7	0.00	0.00	
8,400.0	4.16	55.44	8,379.6	319.2	463.3	61.5	0.00	0.00	
8,500.0	4.16	55.44	8,479.3	323.3	469.3	62.3	0.00	0.00	
8,600.0	4.16	55.44	8,579.1	327.4	475.3	63.0	0.00	0.00	
8,700.0	4.16	55.44	8,678.8	331.5	481.3	63.8	0.00	0.00	
8,800.0	4.16	55.44	8,778.5	335.6	487.2	64.6	0.00	0.00	
8,900.0	4.16	55.44	8,878.3	339.7	493.2	65.4	0.00	0.00	
9,000.0	4.16	55.44	8,978.0	343.9	499.2	66.2	0.00	0.00	
9,100.0	4.16	55.44	9,077.7	348.0	505.2	67.0	0.00	0.00	
9,152.4	4.16	55.44	9,130.0	350.1	508.3	67.4	0.00	0.00	Rollins
9,200.0	4.16	55.44	9,177.5	352.1	511.2	67.8	0.00	0.00	
9,300.0	4.16	55.44	9,277.2	356.2	517.1	68.6	0.00	0.00	
9,400.0	4.16	55.44	9,377.0	360.3	523.1	69.4	0.00	0.00	
9,500.0	4.16	55.44	9,476.7	364.5	529.1	70.2	0.00	0.00	
9,600.0	4.16	55.44	9,576.4	368.6	535.1	71.0	0.00	0.00	
9,700.0	4.16	55.44	9,676.2	372.7	541.1	71.8	0.00	0.00	
9,800.0	4.16	55.44	9,775.9	376.8	547.1	72.6	0.00	0.00	
9,900.0	4.16	55.44	9,875.6	380.9	553.0	73.4	0.00	0.00	
10,000.0	4.16	55.44	9,975.4	385.1	559.0	74.2	0.00	0.00	
10,100.0	4.16	55.44	10,075.1	389.2	565.0	74.9	0.00	0.00	

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Project:	North Piceance	MD Reference:	WELL @ 6453.0ft (Original Well Elev)
Site:	H15 596 (S15-T5S-96W)	North Reference:	True
Well:	DHS3B-23 H15 596	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
10,200.0	4.16	55.44	10,174.8	393.3	571.0	75.7	0.00	0.00	
10,300.0	4.16	55.44	10,274.6	397.4	577.0	76.5	0.00	0.00	
10,400.0	4.16	55.44	10,374.3	401.5	582.9	77.3	0.00	0.00	
10,500.0	4.16	55.44	10,474.0	405.7	588.9	78.1	0.00	0.00	
10,600.0	4.16	55.44	10,573.8	409.8	594.9	78.9	0.00	0.00	
10,700.0	4.16	55.44	10,673.5	413.9	600.9	79.7	0.00	0.00	
10,800.0	4.16	55.44	10,773.3	418.0	606.9	80.5	0.00	0.00	
10,900.0	4.16	55.44	10,873.0	422.1	612.8	81.3	0.00	0.00	
11,000.0	4.16	55.44	10,972.7	426.3	618.8	82.1	0.00	0.00	
11,100.0	4.16	55.44	11,072.5	430.4	624.8	82.9	0.00	0.00	
11,200.0	4.16	55.44	11,172.2	434.5	630.8	83.7	0.00	0.00	
11,300.0	4.16	55.44	11,271.9	438.6	636.8	84.5	0.00	0.00	
11,400.0	4.16	55.44	11,371.7	442.7	642.7	85.3	0.00	0.00	
11,445.4	4.16	55.44	11,417.0	444.6	645.4	85.6	0.00	0.00	Mancos Marker
11,500.0	4.16	55.44	11,471.4	446.8	648.7	86.1	0.00	0.00	
11,600.0	4.16	55.44	11,571.1	451.0	654.7	86.8	0.00	0.00	
11,700.0	4.16	55.44	11,670.9	455.1	660.7	87.6	0.00	0.00	
11,800.0	4.16	55.44	11,770.6	459.2	666.7	88.4	0.00	0.00	
11,900.0	4.16	55.44	11,870.4	463.3	672.6	89.2	0.00	0.00	
12,000.0	4.16	55.44	11,970.1	467.4	678.6	90.0	0.00	0.00	
12,100.0	4.16	55.44	12,069.8	471.6	684.6	90.8	0.00	0.00	
12,200.0	4.16	55.44	12,169.6	475.7	690.6	91.6	0.00	0.00	
12,300.0	4.16	55.44	12,269.3	479.8	696.6	92.4	0.00	0.00	
12,400.0	4.16	55.44	12,369.0	483.9	702.5	93.2	0.00	0.00	
12,500.0	4.16	55.44	12,468.8	488.0	708.5	94.0	0.00	0.00	
12,600.0	4.16	55.44	12,568.5	492.2	714.5	94.8	0.00	0.00	
12,700.0	4.16	55.44	12,668.2	496.3	720.5	95.6	0.00	0.00	
12,800.0	4.16	55.44	12,768.0	500.4	726.5	96.4	0.00	0.00	
12,876.2	4.16	55.44	12,844.0	503.5	731.0	97.0	0.00	0.00	Niobrara
12,900.0	4.16	55.44	12,867.7	504.5	732.4	97.2	0.00	0.00	
13,000.0	4.16	55.44	12,967.4	508.6	738.4	97.9	0.00	0.00	
13,020.4	4.16	55.44	12,987.8	509.5	739.6	98.1	0.00	0.00	Start 10° Build @ 13,020' MD
13,050.0	5.00	91.81	13,017.3	510.0	741.8	99.1	10.00	2.81	
13,100.0	8.81	120.09	13,066.9	508.1	747.3	104.2	10.00	7.62	
13,150.0	13.42	130.33	13,116.0	502.4	755.0	113.6	10.00	9.23	
13,200.0	18.24	135.33	13,164.1	493.0	765.0	127.1	10.00	9.63	
13,250.0	23.13	138.27	13,210.9	480.1	777.0	144.7	10.00	9.78	
13,300.0	28.06	140.23	13,255.9	463.8	791.1	166.3	10.00	9.86	
13,350.0	33.01	141.65	13,299.0	444.0	807.1	191.7	10.00	9.90	
13,400.0	37.97	142.73	13,339.7	421.1	824.8	220.7	10.00	9.92	
13,450.0	42.94	143.59	13,377.7	395.1	844.3	253.0	10.00	9.94	
13,500.0	47.91	144.31	13,412.8	366.4	865.2	288.5	10.00	9.95	
13,550.0	52.89	144.92	13,444.7	334.9	887.5	326.9	10.00	9.96	
13,600.0	57.87	145.46	13,473.1	301.2	911.0	367.8	10.00	9.96	
13,650.0	62.85	145.94	13,497.8	265.3	935.5	410.9	10.00	9.97	
13,700.0	67.83	146.38	13,518.6	227.5	960.8	456.0	10.00	9.97	
13,750.0	72.82	146.79	13,535.5	188.3	986.7	502.7	10.00	9.97	
13,800.0	77.81	147.18	13,548.1	147.7	1,013.0	550.6	10.00	9.97	
13,850.0	82.79	147.55	13,556.6	106.2	1,039.6	599.4	10.00	9.97	
13,900.0	87.78	147.91	13,560.7	64.1	1,066.2	648.6	10.00	9.97	
13,911.1	88.89	148.00	13,561.0	54.7	1,072.1	659.6	10.00	9.97	Landing Point @ 13,561', 88.89° - NioLamSilt
14,000.0	88.89	148.00	13,562.7	-20.7	1,119.2	747.4	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well DHS3B-23 H15 596
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 6453.0ft (Original Well Elev)
Project:	North Piceance	MD Reference:	WELL @ 6453.0ft (Original Well Elev)
Site:	H15 596 (S15-T5S-96W)	North Reference:	True
Well:	DHS3B-23 H15 596	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
14,100.0	88.89	148.00	13,564.7	-105.5	1,172.2	846.2	0.00	0.00	
14,200.0	88.89	148.00	13,566.6	-190.2	1,225.2	945.0	0.00	0.00	
14,300.0	88.89	148.00	13,568.5	-275.0	1,278.2	1,043.8	0.00	0.00	
14,400.0	88.89	148.00	13,570.5	-359.8	1,331.1	1,142.6	0.00	0.00	
14,500.0	88.89	148.00	13,572.4	-444.6	1,384.1	1,241.4	0.00	0.00	
14,600.0	88.89	148.00	13,574.4	-529.4	1,437.1	1,340.2	0.00	0.00	
14,700.0	88.89	148.00	13,576.3	-614.2	1,490.1	1,439.0	0.00	0.00	
14,800.0	88.89	148.00	13,578.2	-698.9	1,543.1	1,537.8	0.00	0.00	
14,900.0	88.89	148.00	13,580.2	-783.7	1,596.1	1,636.6	0.00	0.00	
15,000.0	88.89	148.00	13,582.1	-868.5	1,649.1	1,735.4	0.00	0.00	
15,100.0	88.89	148.00	13,584.0	-953.3	1,702.1	1,834.2	0.00	0.00	
15,200.0	88.89	148.00	13,586.0	-1,038.1	1,755.1	1,933.0	0.00	0.00	
15,300.0	88.89	148.00	13,587.9	-1,122.9	1,808.0	2,031.8	0.00	0.00	
15,400.0	88.89	148.00	13,589.9	-1,207.7	1,861.0	2,130.6	0.00	0.00	
15,500.0	88.89	148.00	13,591.8	-1,292.4	1,914.0	2,229.4	0.00	0.00	
15,600.0	88.89	148.00	13,593.7	-1,377.2	1,967.0	2,328.2	0.00	0.00	
15,700.0	88.89	148.00	13,595.7	-1,462.0	2,020.0	2,427.0	0.00	0.00	
15,800.0	88.89	148.00	13,597.6	-1,546.8	2,073.0	2,525.8	0.00	0.00	
15,900.0	88.89	148.00	13,599.6	-1,631.6	2,126.0	2,624.6	0.00	0.00	
16,000.0	88.89	148.00	13,601.5	-1,716.4	2,179.0	2,723.3	0.00	0.00	
16,100.0	88.89	148.00	13,603.4	-1,801.1	2,232.0	2,822.1	0.00	0.00	
16,200.0	88.89	148.00	13,605.4	-1,885.9	2,284.9	2,920.9	0.00	0.00	
16,300.0	88.89	148.00	13,607.3	-1,970.7	2,337.9	3,019.7	0.00	0.00	
16,400.0	88.89	148.00	13,609.2	-2,055.5	2,390.9	3,118.5	0.00	0.00	
16,500.0	88.89	148.00	13,611.2	-2,140.3	2,443.9	3,217.3	0.00	0.00	
16,600.0	88.89	148.00	13,613.1	-2,225.1	2,496.9	3,316.1	0.00	0.00	
16,700.0	88.89	148.00	13,615.1	-2,309.9	2,549.9	3,414.9	0.00	0.00	
16,800.0	88.89	148.00	13,617.0	-2,394.6	2,602.9	3,513.7	0.00	0.00	
16,900.0	88.89	148.00	13,618.9	-2,479.4	2,655.9	3,612.5	0.00	0.00	
17,000.0	88.89	148.00	13,620.9	-2,564.2	2,708.8	3,711.3	0.00	0.00	
17,100.0	88.89	148.00	13,622.8	-2,649.0	2,761.8	3,810.1	0.00	0.00	
17,200.0	88.89	148.00	13,624.7	-2,733.8	2,814.8	3,908.9	0.00	0.00	
17,300.0	88.89	148.00	13,626.7	-2,818.6	2,867.8	4,007.7	0.00	0.00	
17,400.0	88.89	148.00	13,628.6	-2,903.3	2,920.8	4,106.5	0.00	0.00	
17,500.0	88.89	148.00	13,630.6	-2,988.1	2,973.8	4,205.3	0.00	0.00	
17,600.0	88.89	148.00	13,632.5	-3,072.9	3,026.8	4,304.1	0.00	0.00	
17,700.0	88.89	148.00	13,634.4	-3,157.7	3,079.8	4,402.9	0.00	0.00	
17,800.0	88.89	148.00	13,636.4	-3,242.5	3,132.8	4,501.7	0.00	0.00	
17,900.0	88.89	148.00	13,638.3	-3,327.3	3,185.7	4,600.5	0.00	0.00	
18,000.0	88.89	148.00	13,640.3	-3,412.1	3,238.7	4,699.3	0.00	0.00	
18,100.0	88.89	148.00	13,642.2	-3,496.8	3,291.7	4,798.1	0.00	0.00	
18,200.0	88.89	148.00	13,644.1	-3,581.6	3,344.7	4,896.9	0.00	0.00	
18,300.0	88.89	148.00	13,646.1	-3,666.4	3,397.7	4,995.7	0.00	0.00	
18,400.0	88.89	148.00	13,648.0	-3,751.2	3,450.7	5,094.5	0.00	0.00	
18,500.0	88.89	148.00	13,649.9	-3,836.0	3,503.7	5,193.3	0.00	0.00	
18,600.0	88.89	148.00	13,651.9	-3,920.8	3,556.7	5,292.1	0.00	0.00	
18,700.0	88.89	148.00	13,653.8	-4,005.5	3,609.7	5,390.9	0.00	0.00	
18,800.0	88.89	148.00	13,655.8	-4,090.3	3,662.6	5,489.7	0.00	0.00	
18,900.0	88.89	148.00	13,657.7	-4,175.1	3,715.6	5,588.5	0.00	0.00	
19,000.0	88.89	148.00	13,659.6	-4,259.9	3,768.6	5,687.3	0.00	0.00	
19,100.0	88.89	148.00	13,661.6	-4,344.7	3,821.6	5,786.1	0.00	0.00	
19,200.0	88.89	148.00	13,663.5	-4,429.5	3,874.6	5,884.9	0.00	0.00	

Cathedral Energy Services

Planning Report

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Project:	North Piceance	MD Reference:	WELL @ 6453.0ft (Original Well Elev)
Site:	H15 596 (S15-T5S-96W)	North Reference:	True
Well:	DHS3B-23 H15 596	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
19,300.0	88.89	148.00	13,665.5	-4,514.3	3,927.6	5,983.7	0.00	0.00	
19,400.0	88.89	148.00	13,667.4	-4,599.0	3,980.6	6,082.4	0.00	0.00	
19,431.4	88.89	148.00	13,668.0	-4,625.7	3,997.2	6,113.5	0.00	0.00	TD @ 19,431' MD

Targets									
Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	
- Shape									Latitude Longitude
DHS3B-23 H15 596 BHL	- plan hits target center	0.00	0.00	13,668.0	-4,625.7	3,997.2	1,655,366.60	2,258,396.28	39° 36' 11.76 N 108° 7' 56.38 W
DHS3B-23 H15 596 LP	- plan hits target center	0.00	0.00	13,561.0	54.7	1,072.1	1,660,130.18	2,255,608.72	39° 36' 58.02 N 108° 8' 33.75 W
	- Point								

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,576.0	5,563.0	Williams Fork			
9,152.4	9,130.0	Rollins			
11,445.4	11,417.0	Mancos Marker			
12,876.2	12,844.0	Niobrara			
13,911.1	13,561.0	NioLamSilt			

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
600.0	600.0	0.0	0.0	KOP @ 600'
704.1	704.0	2.1	3.1	EOB @ Inc. = 4.16°
13,020.4	12,987.8	509.5	739.6	Start 10° Build @ 13,020' MD
13,911.1	13,561.0	54.7	1,072.1	Landing Point @ 13,561', 88.89°
19,431.4	13,668.0	-4,625.7	3,997.2	TD @ 19,431' MD