

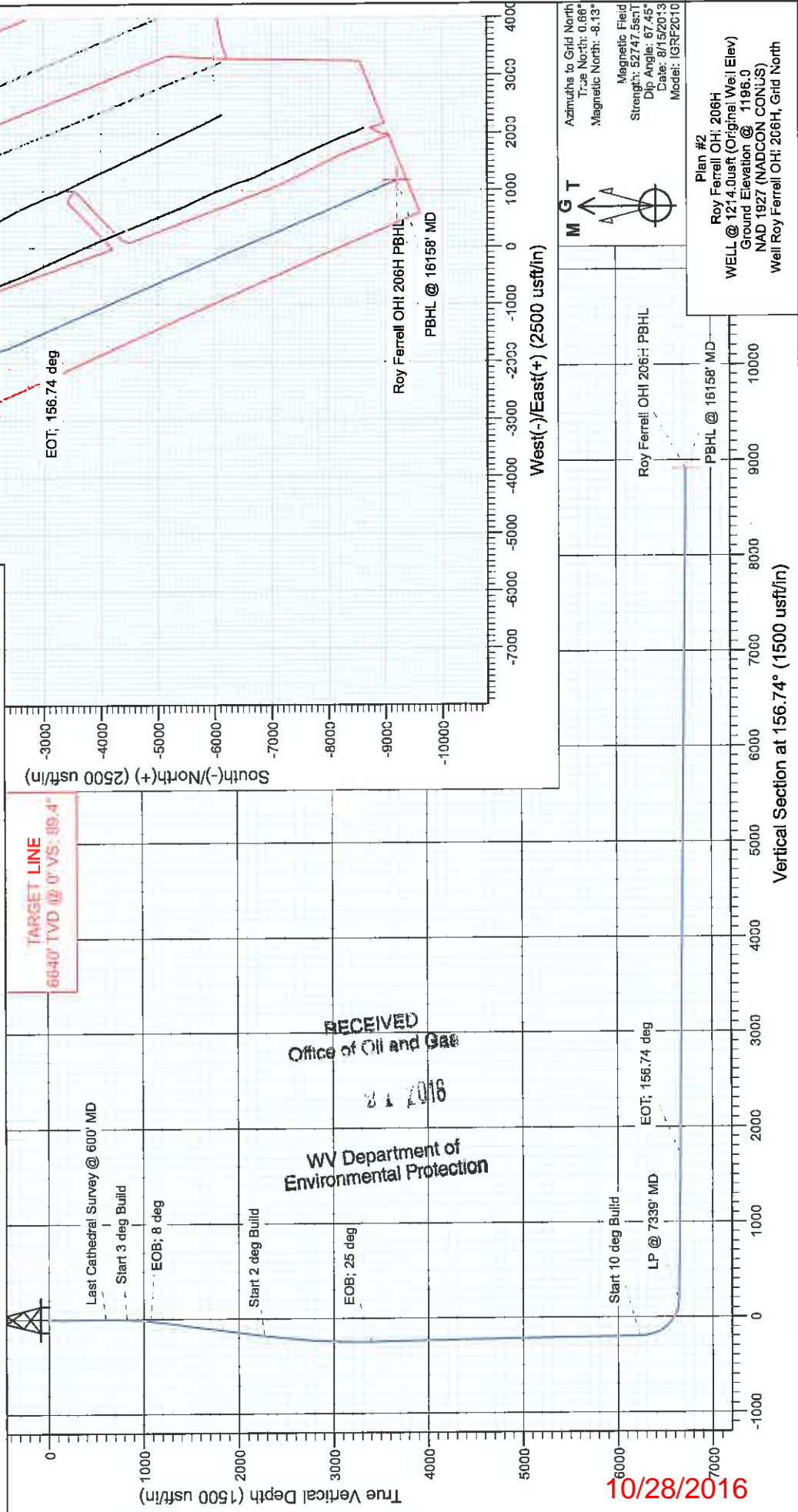


Project: Ohio County, WV
 Site: Roy Ferrell OHI Pad
 Well: Roy Ferrell OHI 206H
 Wellbore: HZ
 Design: Plan #2



SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+EAW	Ddeg	TFace	VSecl	Target	Annotation
600.0	0.49	293.62	600.0	2.4	-1.9	0.00	0.00	-2.9		Tie on @ 600' MD
821.0	0.49	293.62	821.0	3.1	-3.7	0.00	0.00	-4.3		Start 3 deg Build
1072.5	8.00	315.00	1071.6	16.0	-17.0	3.00	22.73	-21.4		EOB; 8 deg
2284.9	8.00	315.00	2272.2	135.3	-136.3	0.00	0.00	-178.1		Start 2 deg Build
3459.4	25.00	244.50	3401.9	85.5	-422.2	2.00	-88.05	-245.3		EOB; 25 deg
6584.3	25.00	244.50	6234.0	-483.0	-1614.2	0.00	0.00	-193.7		Start 10 deg Build
7339.9	89.40	189.10	6641.1	-1002.3	-1853.8	10.00	-58.21	188.8		LP @ 7339' MD
8957.5	89.40	156.74	6658.5	-2586.3	-1657.1	2.00	-90.17	1721.7		EOT; 156.74 deg
16158.8	89.40	156.74	6733.4	-9202.2	1186.0	0.00	0.00	8922.6		PBHL @ 16158' MD



M G T
 Azimuths to Grid North
 True North: 0.66°
 Magnetic North: -8.13°
 Magnetic Field
 Strength: 52747.5sT
 Dip Angle: 87.45°
 Date: 8/15/2013
 Model: IGRF2010

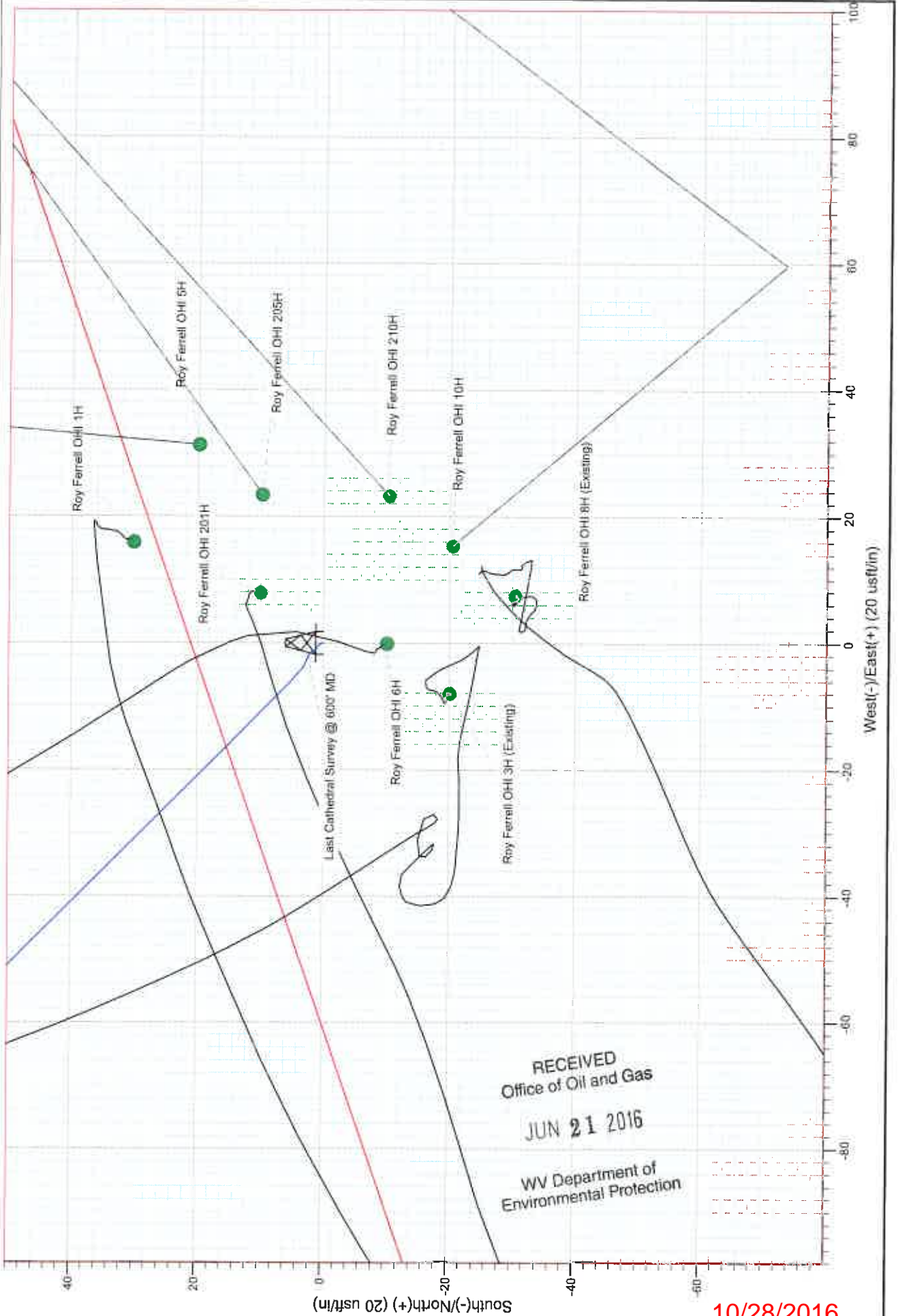
Plan #2
 Roy Ferrell OHI: 206H
 WELL @ 1214.0usft (Original Well Elev)
 Ground Elevation @ 1196.0
 NAD 1927 (NADCON CONUS)
 Well Roy Ferrell OHI: 206H, Grid North

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CATHEDRAL

Project: Ohio County, WV
Site: Roy Ferrell OHI Pad
Well: Roy Ferrell OHI 208H
Wellbore: HZ
Design: Plan #2



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Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Roy Ferrell OHI 206H
Company:	Chesapeake Energy Corp	TVD Reference:	WELL @ 1214.0usft (Original Well Elev)
Project:	Ohio County, WV	MD Reference:	WELL @ 1214.0usft (Original Well Elev)
Site:	Roy Ferrell OHI Pad	North Reference:	Grid
Well:	Roy Ferrell OHI 206H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #2		

Project	Ohio County, WV		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	West Virginia North 4701		Using geodetic scale factor

Site	Roy Ferrell OHI Pad				
Site Position:		Northing:	563,734.16 usft	Latitude:	40° 2' 35.50 N
From:	Lat/Long	Easting:	1,711,287.79 usft	Longitude:	80° 31' 52.30 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	-0.66 °

Well	Roy Ferrell OHI 206H					
Well Position	+N/-S	0.0 usft	Northing:	563,724.12 usft	Latitude:	40° 2' 35.40 N
	+E/-W	0.0 usft	Easting:	1,711,279.90 usft	Longitude:	80° 31' 52.40 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	1,196.0 usft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/15/2013	-8.79	67.45	52,747

Design	Plan #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	600.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	156.74

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
600.0	0.49	293.62	600.0	2.4	-1.9	0.00	0.00	0.00	0.00	
821.0	0.49	293.62	821.0	3.1	-3.7	0.00	0.00	0.00	0.00	
1,072.5	8.00	315.00	1,071.6	16.0	-17.0	3.00	2.99	8.50	22.73	
2,284.9	8.00	315.00	2,272.2	135.3	-136.3	0.00	0.00	0.00	0.00	
3,459.4	25.00	244.50	3,401.9	85.5	-422.2	2.00	1.45	-6.00	-88.05	
6,584.3	25.00	244.50	6,234.0	-483.0	-1,614.2	0.00	0.00	0.00	0.00	
7,339.9	89.40	189.10	6,641.1	-1,002.3	-1,853.8	10.00	8.52	-7.33	-58.21	
8,957.5	89.40	156.74	6,658.5	-2,586.3	-1,857.1	2.00	0.00	-2.00	-90.17	
16,158.8	89.40	156.74	6,733.4	-9,202.2	1,186.0	0.00	0.00	0.00	0.00	Roy Ferrell OHI 206H

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Environmental Protection



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Roy Ferrell OHI 206H
Company:	Chesapeake Energy Corp	TVD Reference:	WELL @ 1214.0usft (Original Well Elev)
Project:	Ohio County, WV	MD Reference:	WELL @ 1214.0usft (Original Well Elev)
Site:	Roy Ferrell OHI Pad	North Reference:	Grid
Well:	Roy Ferrell OHI 206H	Survey Calculation Method	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.25	7.39	100.0	0.2	0.0	-0.2	0.25	0.25	
200.0	0.44	309.02	200.0	0.7	-0.2	-0.7	0.38	0.19	
300.0	0.24	286.50	300.0	1.0	-0.7	-1.2	0.24	-0.20	
400.0	0.37	338.00	400.0	1.3	-1.1	-1.6	0.29	0.13	
500.0	0.38	328.64	500.0	1.9	-1.4	-2.3	0.06	0.01	
600.0	0.49	293.62	600.0	2.4	-1.9	-2.9	0.28	0.11	Tie on @ 600' MD
700.0	0.49	293.62	700.0	2.7	-2.7	-3.6	0.00	0.00	
800.0	0.49	293.62	800.0	3.1	-3.5	-4.2	0.00	0.00	
821.0	0.49	293.62	821.0	3.1	-3.7	-4.3	0.00	0.00	Start 3 deg Build
900.0	2.83	312.51	899.9	4.6	-5.4	-6.3	3.00	2.96	
1,000.0	5.83	314.49	999.6	9.8	-10.8	-13.3	3.00	3.00	
1,072.5	8.00	315.00	1,071.6	16.0	-17.0	-21.4	3.00	3.00	EOB; 8 deg
1,100.0	8.00	315.00	1,098.8	18.7	-19.7	-24.9	0.00	0.00	
1,200.0	8.00	315.00	1,197.9	28.5	-29.6	-37.9	0.00	0.00	
1,300.0	8.00	315.00	1,296.9	38.3	-39.4	-50.8	0.00	0.00	
1,400.0	8.00	315.00	1,395.9	48.2	-49.3	-63.7	0.00	0.00	
1,500.0	8.00	315.00	1,495.0	58.0	-59.1	-76.6	0.00	0.00	
1,600.0	8.00	315.00	1,594.0	67.9	-68.9	-89.6	0.00	0.00	
1,700.0	8.00	315.00	1,693.0	77.7	-78.8	-102.5	0.00	0.00	
1,800.0	8.00	315.00	1,792.0	87.5	-88.6	-115.4	0.00	0.00	
1,900.0	8.00	315.00	1,891.1	97.4	-98.5	-128.4	0.00	0.00	
2,000.0	8.00	315.00	1,990.1	107.2	-108.3	-141.3	0.00	0.00	
2,100.0	8.00	315.00	2,089.1	117.1	-118.1	-154.2	0.00	0.00	
2,200.0	8.00	315.00	2,188.1	126.9	-128.0	-167.1	0.00	0.00	
2,284.9	8.00	315.00	2,272.2	135.3	-136.3	-178.1	0.00	0.00	Start 2 deg Build
2,300.0	8.02	312.83	2,287.2	136.7	-137.9	-180.1	2.00	0.11	
2,400.0	8.40	299.04	2,386.2	145.0	-149.4	-192.2	2.00	0.38	
2,500.0	9.21	287.05	2,485.0	150.9	-163.4	-203.2	2.00	0.81	
2,600.0	10.34	277.31	2,583.5	154.4	-179.9	-212.9	2.00	1.13	
2,700.0	11.71	269.65	2,681.7	155.5	-199.0	-221.4	2.00	1.37	
2,800.0	13.23	263.65	2,779.3	154.1	-220.5	-228.7	2.00	1.53	
2,900.0	14.87	258.91	2,876.3	150.4	-244.5	-234.7	2.00	1.64	
3,000.0	16.58	255.11	2,972.6	144.3	-270.9	-239.5	2.00	1.72	
3,100.0	18.36	252.01	3,068.0	135.7	-299.6	-243.0	2.00	1.77	
3,200.0	20.17	249.45	3,162.4	124.8	-330.7	-245.3	2.00	1.81	
3,300.0	22.01	247.30	3,255.7	111.5	-364.2	-246.3	2.00	1.84	
3,400.0	23.88	245.47	3,347.8	95.9	-399.9	-246.0	2.00	1.87	
3,459.4	25.00	244.50	3,401.9	85.5	-422.2	-245.3	2.00	1.88	EOB; 25 deg
3,500.0	25.00	244.50	3,438.6	78.1	-437.6	-244.6	0.00	0.00	
3,600.0	25.00	244.50	3,529.3	59.9	-475.8	-242.9	0.00	0.00	
3,700.0	25.00	244.50	3,619.9	41.7	-513.9	-241.3	0.00	0.00	
3,800.0	25.00	244.50	3,710.5	23.5	-552.1	-239.6	0.00	0.00	
3,900.0	25.00	244.50	3,801.2	5.3	-590.2	-238.0	0.00	0.00	
4,000.0	25.00	244.50	3,891.8	-12.8	-628.4	-236.3	0.00	0.00	
4,100.0	25.00	244.50	3,982.4	-31.0	-666.5	-234.7	0.00	0.00	
4,200.0	25.00	244.50	4,073.1	-49.2	-704.7	-233.0	0.00	0.00	
4,300.0	25.00	244.50	4,163.7	-67.4	-742.8	-231.4	0.00	0.00	
4,400.0	25.00	244.50	4,254.3	-85.6	-780.9	-229.7	0.00	0.00	
4,500.0	25.00	244.50	4,345.0	-103.8	-819.1	-228.1	0.00	0.00	
4,600.0	25.00	244.50	4,435.6	-122.0	-857.2	-226.4	0.00	0.00	
4,700.0	25.00	244.50	4,526.2	-140.2	-895.4	-224.8	0.00	0.00	

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Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: Chesapeake Energy Corp
Project: Ohio County, WV
Site: Roy Ferrell OHI Pad
Well: Roy Ferrell OHI 206H
Wellbore: HZ
Design: Plan #2

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Well Roy Ferrell OHI 206H
 WELL @ 1214.0usft (Original Well Elev)
 WELL @ 1214.0usft (Original Well Elev)
 Grid
 Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate ("/100u)	Comments / Formations
4,800.0	25.00	244.50	4,616.8	-158.4	-933.5	-223.1	0.00	0.00	
4,900.0	25.00	244.50	4,707.5	-176.6	-971.7	-221.5	0.00	0.00	
5,000.0	25.00	244.50	4,798.1	-194.8	-1,009.8	-219.8	0.00	0.00	
5,100.0	25.00	244.50	4,888.7	-213.0	-1,048.0	-218.2	0.00	0.00	
5,200.0	25.00	244.50	4,979.4	-231.2	-1,086.1	-216.5	0.00	0.00	
5,300.0	25.00	244.50	5,070.0	-249.4	-1,124.3	-214.9	0.00	0.00	
5,400.0	25.00	244.50	5,160.6	-267.6	-1,162.4	-213.2	0.00	0.00	
5,500.0	25.00	244.50	5,251.3	-285.8	-1,200.5	-211.6	0.00	0.00	
5,600.0	25.00	244.50	5,341.9	-304.0	-1,238.7	-209.9	0.00	0.00	
5,700.0	25.00	244.50	5,432.5	-322.1	-1,276.8	-208.3	0.00	0.00	
5,800.0	25.00	244.50	5,523.2	-340.3	-1,315.0	-206.6	0.00	0.00	
5,900.0	25.00	244.50	5,613.8	-358.5	-1,353.1	-205.0	0.00	0.00	
6,000.0	25.00	244.50	5,704.4	-376.7	-1,391.3	-203.3	0.00	0.00	
6,100.0	25.00	244.50	5,795.0	-394.9	-1,429.4	-201.7	0.00	0.00	
6,200.0	25.00	244.50	5,885.7	-413.1	-1,467.6	-200.0	0.00	0.00	
6,300.0	25.00	244.50	5,976.3	-431.3	-1,505.7	-198.3	0.00	0.00	
6,400.0	25.00	244.50	6,066.9	-449.5	-1,543.8	-196.7	0.00	0.00	
6,500.0	25.00	244.50	6,157.6	-467.7	-1,582.0	-195.0	0.00	0.00	
6,584.3	25.00	244.50	6,234.0	-483.0	-1,614.2	-193.7	0.00	0.00	Start 10 deg Build
6,600.0	25.86	241.45	6,248.2	-486.1	-1,620.2	-193.2	10.00	5.47	
6,650.0	28.97	232.92	6,292.5	-498.6	-1,639.4	-189.3	10.00	6.22	
6,700.0	32.51	226.01	6,335.5	-515.3	-1,658.7	-181.7	10.00	7.09	
6,750.0	36.37	220.38	6,376.8	-535.9	-1,678.0	-170.3	10.00	7.71	
6,800.0	40.45	215.71	6,415.9	-560.4	-1,697.1	-155.4	10.00	8.15	
6,850.0	44.68	211.77	6,452.8	-588.5	-1,715.8	-136.9	10.00	8.47	
6,900.0	49.03	208.39	6,487.0	-620.1	-1,734.1	-115.1	10.00	8.70	
6,950.0	53.47	205.44	6,518.3	-654.9	-1,751.7	-90.1	10.00	8.87	
7,000.0	57.97	202.80	6,546.4	-692.6	-1,768.6	-62.1	10.00	9.00	
7,050.0	62.52	200.42	6,571.2	-732.9	-1,784.5	-31.4	10.00	9.10	
7,100.0	67.11	198.22	6,592.5	-775.6	-1,799.5	1.9	10.00	9.18	
7,150.0	71.73	196.17	6,610.1	-820.3	-1,813.3	37.6	10.00	9.23	
7,200.0	76.37	194.23	6,623.8	-866.7	-1,825.9	75.2	10.00	9.28	
7,250.0	81.02	192.36	6,633.6	-914.4	-1,837.1	114.6	10.00	9.30	
7,300.0	85.68	190.54	6,639.4	-963.0	-1,847.0	155.4	10.00	9.32	
7,339.9	89.40	189.10	6,641.1	-1,002.3	-1,853.8	188.8	10.00	9.33	LP @ 7339' MD
7,400.0	89.40	187.90	6,641.7	-1,061.8	-1,862.7	239.9	2.00	-0.01	
7,500.0	89.39	185.90	6,642.8	-1,161.0	-1,874.7	326.3	2.00	-0.01	
7,600.0	89.39	183.90	6,643.9	-1,260.6	-1,883.2	414.5	2.00	0.00	
7,700.0	89.38	181.90	6,644.9	-1,360.5	-1,888.3	504.2	2.00	0.00	
7,800.0	89.38	179.90	6,646.0	-1,460.5	-1,889.8	595.5	2.00	0.00	
7,900.0	89.38	177.90	6,647.1	-1,560.5	-1,887.9	688.1	2.00	0.00	
8,000.0	89.38	175.90	6,648.2	-1,660.3	-1,882.5	781.9	2.00	0.00	
8,100.0	89.38	173.90	6,649.3	-1,759.9	-1,873.6	877.0	2.00	0.00	
8,200.0	89.38	171.90	6,650.4	-1,859.1	-1,861.2	973.0	2.00	0.00	
8,300.0	89.38	169.90	6,651.4	-1,957.8	-1,845.4	1,069.9	2.00	0.00	
8,400.0	89.38	167.90	6,652.5	-2,056.0	-1,826.2	1,167.7	2.00	0.00	
8,500.0	89.38	165.90	6,653.6	-2,153.3	-1,803.5	1,266.1	2.00	0.00	
8,600.0	89.39	163.90	6,654.7	-2,249.9	-1,777.4	1,365.1	2.00	0.00	
8,700.0	89.39	161.90	6,655.7	-2,345.4	-1,748.0	1,464.5	2.00	0.00	
8,800.0	89.39	159.90	6,656.8	-2,439.9	-1,715.3	1,564.2	2.00	0.00	
8,900.0	89.40	157.90	6,657.9	-2,533.2	-1,679.3	1,664.2	2.00	0.01	
8,957.5	89.40	156.74	6,658.5	-2,586.3	-1,657.1	1,721.7	2.00	0.01	EOT; 156.74 deg

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Local Co-ordinate Reference:
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North Reference:
Survey Calculation Method:

Well Roy Ferrell OHI 206H
 WELL @ 1214.0usft (Original Well Elev)
 WELL @ 1214.0usft (Original Well Elev)
 Grid
 Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
9,000.0	89.40	156.74	6,658.9	-2,625.3	-1,640.3	1,764.1	0.00	0.00	
9,100.0	89.40	156.74	6,659.9	-2,717.2	-1,600.9	1,864.1	0.00	0.00	
9,200.0	89.40	156.74	6,661.0	-2,809.0	-1,561.4	1,964.1	0.00	0.00	
9,300.0	89.40	156.74	6,662.0	-2,900.9	-1,521.9	2,064.1	0.00	0.00	
9,400.0	89.40	156.74	6,663.1	-2,992.8	-1,482.4	2,164.1	0.00	0.00	
9,500.0	89.40	156.74	6,664.1	-3,084.7	-1,442.9	2,264.1	0.00	0.00	
9,600.0	89.40	156.74	6,665.1	-3,176.5	-1,403.5	2,364.1	0.00	0.00	
9,700.0	89.40	156.74	6,666.2	-3,268.4	-1,364.0	2,464.1	0.00	0.00	
9,800.0	89.40	156.74	6,667.2	-3,360.3	-1,324.5	2,564.1	0.00	0.00	
9,900.0	89.40	156.74	6,668.3	-3,452.1	-1,285.0	2,664.1	0.00	0.00	
10,000.0	89.40	156.74	6,669.3	-3,544.0	-1,245.5	2,764.1	0.00	0.00	
10,100.0	89.40	156.74	6,670.4	-3,635.9	-1,206.1	2,864.1	0.00	0.00	
10,200.0	89.40	156.74	6,671.4	-3,727.8	-1,166.6	2,964.1	0.00	0.00	
10,300.0	89.40	156.74	6,672.4	-3,819.6	-1,127.1	3,064.1	0.00	0.00	
10,400.0	89.40	156.74	6,673.5	-3,911.5	-1,087.6	3,164.1	0.00	0.00	
10,500.0	89.40	156.74	6,674.5	-4,003.4	-1,048.1	3,264.1	0.00	0.00	
10,600.0	89.40	156.74	6,675.6	-4,095.2	-1,008.7	3,364.1	0.00	0.00	
10,700.0	89.40	156.74	6,676.6	-4,187.1	-969.2	3,464.1	0.00	0.00	
10,800.0	89.40	156.74	6,677.6	-4,279.0	-929.7	3,564.0	0.00	0.00	
10,900.0	89.40	156.74	6,678.7	-4,370.8	-890.2	3,664.0	0.00	0.00	
11,000.0	89.40	156.74	6,679.7	-4,462.7	-850.7	3,764.0	0.00	0.00	
11,100.0	89.40	156.74	6,680.8	-4,554.6	-811.3	3,864.0	0.00	0.00	
11,200.0	89.40	156.74	6,681.8	-4,646.5	-771.8	3,964.0	0.00	0.00	
11,300.0	89.40	156.74	6,682.8	-4,738.3	-732.3	4,064.0	0.00	0.00	
11,400.0	89.40	156.74	6,683.9	-4,830.2	-692.8	4,164.0	0.00	0.00	
11,500.0	89.40	156.74	6,684.9	-4,922.1	-653.3	4,264.0	0.00	0.00	
11,600.0	89.40	156.74	6,686.0	-5,013.9	-613.9	4,364.0	0.00	0.00	
11,700.0	89.40	156.74	6,687.0	-5,105.8	-574.4	4,464.0	0.00	0.00	
11,800.0	89.40	156.74	6,688.0	-5,197.7	-534.9	4,564.0	0.00	0.00	
11,900.0	89.40	156.74	6,689.1	-5,289.5	-495.4	4,664.0	0.00	0.00	
12,000.0	89.40	156.74	6,690.1	-5,381.4	-455.9	4,764.0	0.00	0.00	
12,100.0	89.40	156.74	6,691.2	-5,473.3	-416.4	4,864.0	0.00	0.00	
12,200.0	89.40	156.74	6,692.2	-5,565.2	-377.0	4,964.0	0.00	0.00	
12,300.0	89.40	156.74	6,693.2	-5,657.0	-337.5	5,064.0	0.00	0.00	
12,400.0	89.40	156.74	6,694.3	-5,748.9	-298.0	5,164.0	0.00	0.00	
12,500.0	89.40	156.74	6,695.3	-5,840.8	-258.5	5,264.0	0.00	0.00	
12,600.0	89.40	156.74	6,696.4	-5,932.6	-219.0	5,364.0	0.00	0.00	
12,700.0	89.40	156.74	6,697.4	-6,024.5	-179.6	5,463.9	0.00	0.00	
12,800.0	89.40	156.74	6,698.4	-6,116.4	-140.1	5,563.9	0.00	0.00	
12,900.0	89.40	156.74	6,699.5	-6,208.3	-100.6	5,663.9	0.00	0.00	
13,000.0	89.40	156.74	6,700.5	-6,300.1	-61.1	5,763.9	0.00	0.00	
13,100.0	89.40	156.74	6,701.6	-6,392.0	-21.6	5,863.9	0.00	0.00	
13,200.0	89.40	156.74	6,702.6	-6,483.9	17.8	5,963.9	0.00	0.00	
13,300.0	89.40	156.74	6,703.7	-6,575.7	57.3	6,063.9	0.00	0.00	
13,400.0	89.40	156.74	6,704.7	-6,667.6	96.8	6,163.9	0.00	0.00	
13,500.0	89.40	156.74	6,705.7	-6,759.5	136.3	6,263.9	0.00	0.00	
13,600.0	89.40	156.74	6,706.8	-6,851.3	175.8	6,363.9	0.00	0.00	
13,700.0	89.40	156.74	6,707.8	-6,943.2	215.2	6,463.9	0.00	0.00	
13,800.0	89.40	156.74	6,708.9	-7,035.1	254.7	6,563.9	0.00	0.00	
13,900.0	89.40	156.74	6,709.9	-7,127.0	294.2	6,663.9	0.00	0.00	
14,000.0	89.40	156.74	6,710.9	-7,218.8	333.7	6,763.9	0.00	0.00	
14,100.0	89.40	156.74	6,712.0	-7,310.7	373.2	6,863.9	0.00	0.00	

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Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Roy Ferrell OHI 206H
Company:	Chesapeake Energy Corp	TVD Reference:	WELL @ 1214.0usft (Original Well Elev)
Project:	Ohio County, WV	MD Reference:	WELL @ 1214.0usft (Original Well Elev)
Site:	Roy Ferrell OHI Pad	North Reference:	Grid
Well:	Roy Ferrell OHI 206H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
14,200.0	89.40	156.74	6,713.0	-7,402.6	412.6	6,963.9	0.00	0.00	
14,300.0	89.40	156.74	6,714.1	-7,494.4	452.1	7,063.9	0.00	0.00	
14,400.0	89.40	156.74	6,715.1	-7,586.3	491.6	7,163.9	0.00	0.00	
14,500.0	89.40	156.74	6,716.1	-7,678.2	531.1	7,263.8	0.00	0.00	
14,600.0	89.40	156.74	6,717.2	-7,770.1	570.6	7,363.8	0.00	0.00	
14,700.0	89.40	156.74	6,718.2	-7,861.9	610.1	7,463.8	0.00	0.00	
14,800.0	89.40	156.74	6,719.3	-7,953.8	649.5	7,563.8	0.00	0.00	
14,900.0	89.40	156.74	6,720.3	-8,045.7	689.0	7,663.8	0.00	0.00	
15,000.0	89.40	156.74	6,721.3	-8,137.5	728.5	7,763.8	0.00	0.00	
15,100.0	89.40	156.74	6,722.4	-8,229.4	768.0	7,863.8	0.00	0.00	
15,200.0	89.40	156.74	6,723.4	-8,321.3	807.5	7,963.8	0.00	0.00	
15,300.0	89.40	156.74	6,724.5	-8,413.1	846.9	8,063.8	0.00	0.00	
15,400.0	89.40	156.74	6,725.5	-8,505.0	886.4	8,163.8	0.00	0.00	
15,500.0	89.40	156.74	6,726.5	-8,596.9	925.9	8,263.8	0.00	0.00	
15,600.0	89.40	156.74	6,727.6	-8,688.8	965.4	8,363.8	0.00	0.00	
15,700.0	89.40	156.74	6,728.6	-8,780.6	1,004.9	8,463.8	0.00	0.00	
15,800.0	89.40	156.74	6,729.7	-8,872.5	1,044.3	8,563.8	0.00	0.00	
15,900.0	89.40	156.74	6,730.7	-8,964.4	1,083.8	8,663.8	0.00	0.00	
16,000.0	89.40	156.74	6,731.7	-9,056.2	1,123.3	8,763.8	0.00	0.00	
16,100.0	89.40	156.74	6,732.8	-9,148.1	1,162.8	8,863.8	0.00	0.00	
16,158.8	89.40	156.74	6,733.4	-9,202.2	1,186.0	8,922.6	0.00	0.00	PBHL @ 16158' MD

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Roy Ferrell OHI 206H LF - hit/miss target - Shape - Point	0.00	0.00	6,640.0	-1,656.2	-2,057.0	562,068.03	1,709,222.95	40° 2' 18.80 N	80° 32' 18.60 W
- plan misses target center by 174.0usft at 7986.3usft MD (6648.0 TVD, -1646.7 N, -1883.4 E)									
Roy Ferrell OHI 206H PI - plan hits target center - Point	0.00	0.00	6,733.4	-9,202.2	1,186.0	554,522.27	1,712,465.87	40° 1' 4.60 N	80° 31' 35.80 W

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
600.0	600.0	2.4	-1.9	Tie on @ 600' MD
821.0	821.0	3.1	-3.7	Start 3 deg Build
1,072.5	1,071.6	16.0	-17.0	EOB; 8 deg
2,284.9	2,272.2	135.3	-136.3	Start 2 deg Build
3,459.4	3,401.9	85.5	-422.2	EOB; 25 deg
6,584.3	6,234.0	-483.0	-1,614.2	Start 10 deg Build
7,339.9	6,641.1	-1,002.3	-1,853.8	LP @ 7339' MD
8,957.5	6,658.5	-2,586.3	-1,657.1	EOT; 156.74 deg
16,158.8	6,733.4	-9,202.2	1,186.0	PBHL @ 16158' MD

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