

# **PDC ENERGY**

**WELD COUNTY, COLORADO  
NW NW SEC. 5 T5N R64W 6th P.M.  
EHRlich 5M-243**

## **ORIGINAL WELLBORE**

**16 March, 2016**

**Plan: PROPOSAL #1**





Project: WELD COUNTY, COLORADO  
Site: NW NW SEC. 5 T5N R64W 6th P.M.  
Well: EHRLICH 5M-243  
Wellbore: ORIGINAL WELLBORE  
Design: PROPOSAL #1

ANNOTATIONS

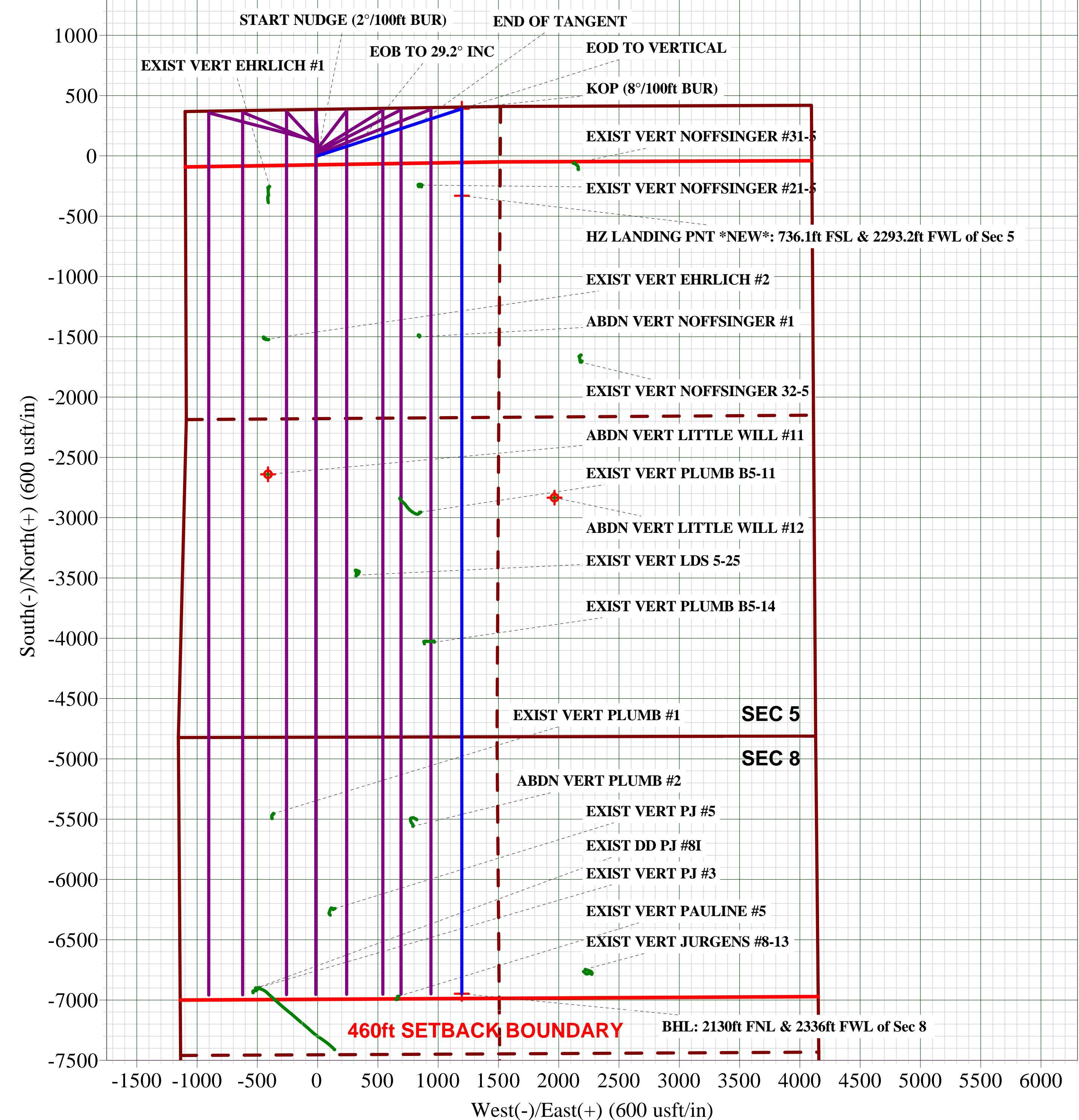
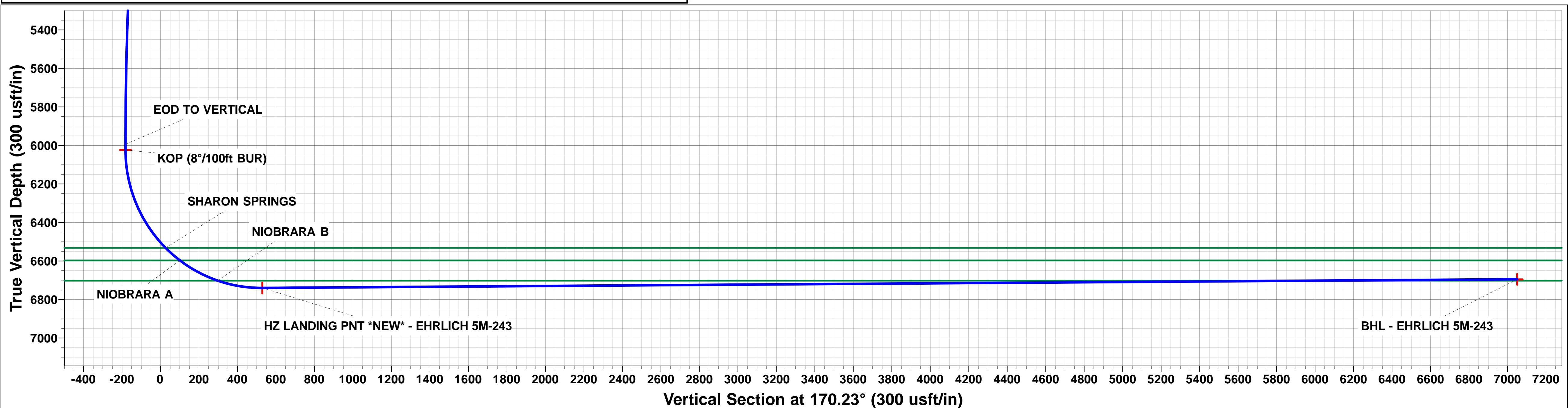
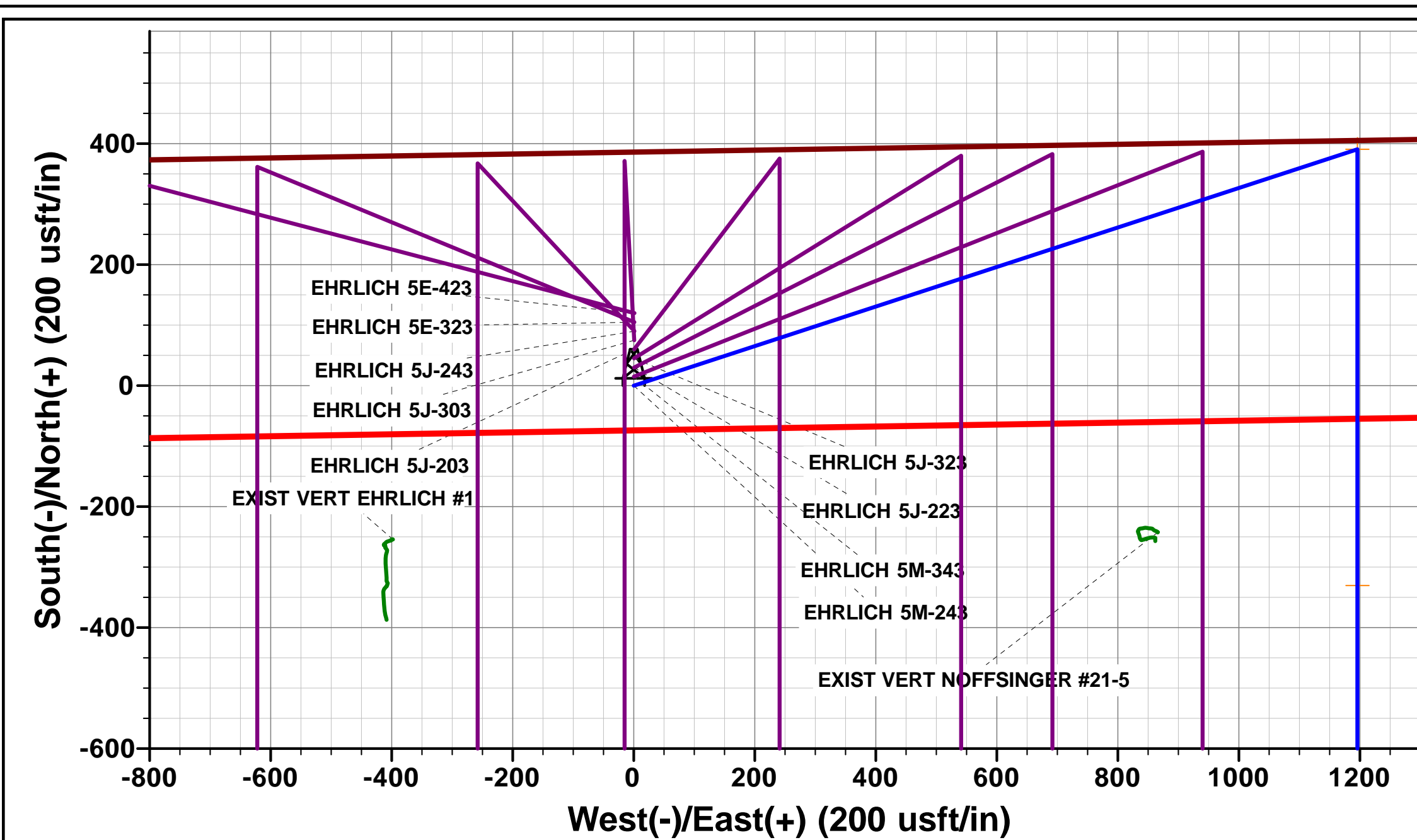
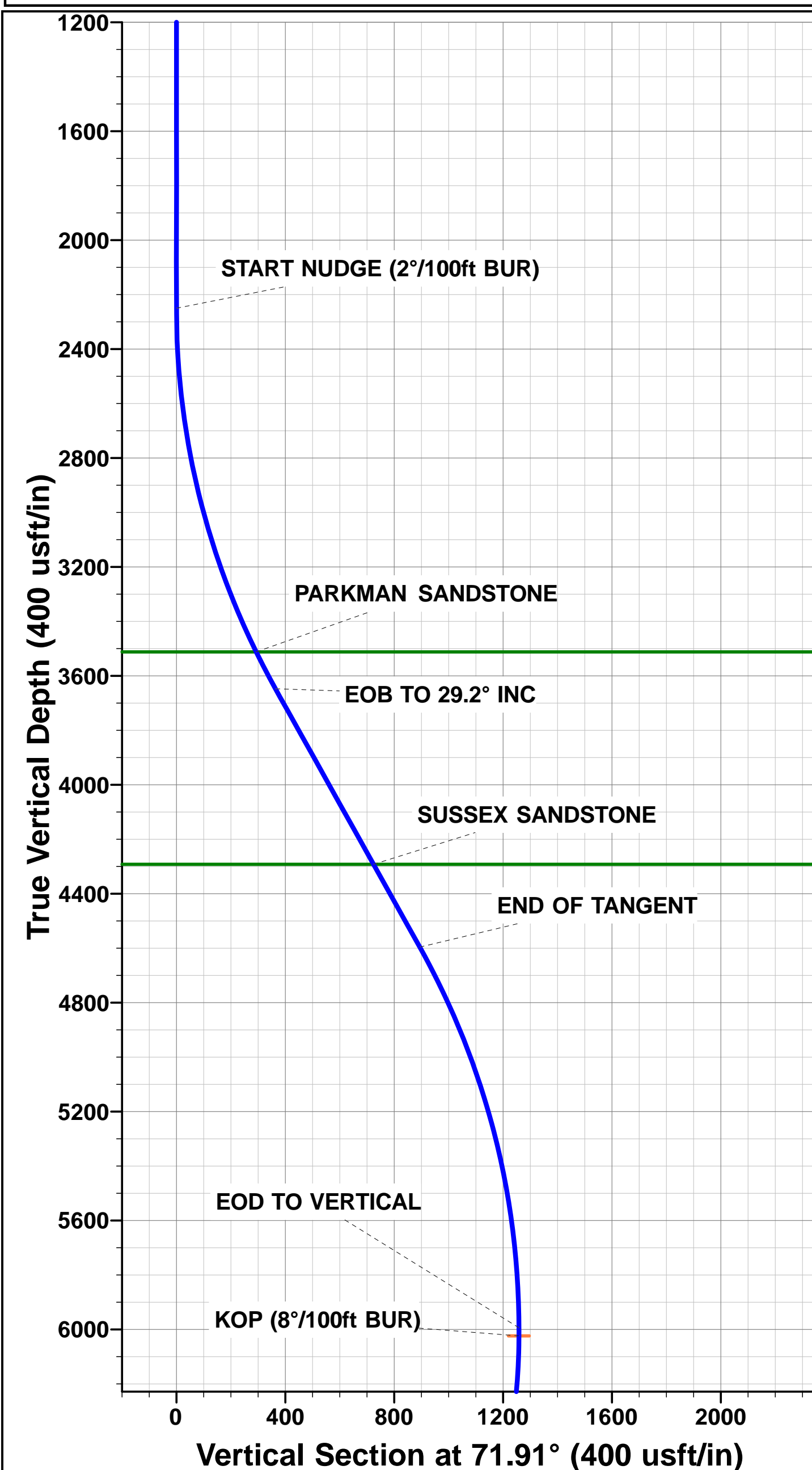
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Dep	Annotation
0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	SHL: 386ft FNL & 1098ft FWL of Sec 5
2250.0	2250.0	0.00	0.00	0.0	0.0	0.0	0.0	START NUDGE (2°/100ft BUR)
3647.5	3709.9	29.20	71.91	113.0	346.0	-52.7	364.0	EOB TO 29.2° INC
4596.3	4796.7	29.20	71.91	277.7	850.0	-129.4	894.2	END OF TANGENT
5993.8	6256.6	0.00	0.00	390.7	1196.0	-182.1	1258.2	EOD TO VERTICAL
6023.8	6286.6	0.00	0.00	390.7	1196.0	-182.1	1258.2	KOP (8°/100ft BUR)
6740.0	7416.5	90.39	180.00	-330.4	1196.0	528.5	1979.3	HZ LANDING PNT *NEW*: 736.1ft FSL & 2293.2ft FWL of Sec 5
6695.0	14034.1	90.39	180.00	-6947.8	1196.0	7050.0	8596.7	BHL: 2130ft FNL & 2336ft FWL of Sec 8

PROPOSED LOCAL COORDINATES:

SHL: 386ft FNL & 1098ft FWL Sec 5  
HZ LNDNG PNT \*NEW\*: 736.1ft FNL & 2293.2ft FWL Sec 5  
BHL: 2130ft FNL & 2336ft FWL Sec 8

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - EHRLICH 5M-243	6023.8	390.7	1196.0	40.435221	-104.575206
BHL - EHRLICH 5M-243	6695.0	-6947.8	1196.0	40.415078	-104.575207
HZ LANDING PNT *NEW* - EHRLICH 5M-243	6740.0	-330.4	1196.0	40.433242	-104.575206



# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well EHRlich 5M-243
<b>Company:</b>	PDC ENERGY	<b>TVD Reference:</b>	KB-EST @ 4664.0usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO	<b>MD Reference:</b>	KB-EST @ 4664.0usft (Original Well Elev)
<b>Site:</b>	NW NW SEC. 5 T5N R64W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	EHRlich 5M-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #1		

<b>Project</b>	WELD COUNTY, COLORADO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

<b>Site</b>	NW NW SEC. 5 T5N R64W 6th P.M.		
<b>Site Position:</b>		<b>Northing:</b>	1,402,450.62 usft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,256,234.63 usft
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	1.10000ft
		<b>Latitude:</b>	40.434478
		<b>Longitude:</b>	-104.579497
		<b>Grid Convergence:</b>	0.59 °

<b>Well</b>	EHRlich 5M-243		
<b>Well Position</b>	<b>+N/-S</b>	-119.9 usft	<b>Northing:</b>
	<b>+E/-W</b>	-1.4 usft	<b>Easting:</b>
<b>Position Uncertainty</b>		0.0 usft	<b>Wellhead Elevation:</b>
			<b>Latitude:</b>
			<b>Longitude:</b>
			<b>Ground Level:</b>

<b>Wellbore</b>	ORIGINAL WELLBORE				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	16/03/2016	8.25	66.94	52,574

<b>Design</b>	PROPOSAL #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	6,695.0	0.0	0.0	170.23

<b>Plan Sections</b>											
MD (usft)	Inc (°)	Azi (°)	Vertical Depth	SS (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100usf)	Turn Rate (°/100usf)	TFO (°)	Target
0.0	0.00	0.00	0.0	-4,664.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,250.0	0.00	0.00	2,250.0	-2,414.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,709.9	29.20	71.91	3,647.5	-1,016.5	113.0	346.0	2.00	2.00	0.00	71.91	
4,796.7	29.20	71.91	4,596.3	-67.7	277.7	850.0	0.00	0.00	0.00	0.00	
6,256.6	0.00	0.00	5,993.8	1,329.8	390.7	1,196.0	2.00	-2.00	0.00	180.00	
6,286.6	0.00	0.00	6,023.8	1,359.8	390.7	1,196.0	0.00	0.00	0.00	0.00	KOP - EHRlich 5M
7,416.5	90.39	180.00	6,740.0	2,076.0	-330.4	1,196.0	8.00	8.00	0.00	180.00	
14,034.1	90.39	180.00	6,695.0	2,031.0	-6,947.8	1,196.0	0.00	0.00	0.00	0.00	BHL - EHRlich 5M

# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well EHRlich 5M-243
<b>Company:</b>	PDC ENERGY	<b>TVD Reference:</b>	KB-EST @ 4664.0usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO	<b>MD Reference:</b>	KB-EST @ 4664.0usft (Original Well Elev)
<b>Site:</b>	NW NW SEC. 5 T5N R64W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	EHRlich 5M-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #1		

## Planned Survey

MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
<b>SHL: 386ft FNL &amp; 1098ft FWL of Sec 5</b>										
0.0	0.00	0.00	0.0	4,664.00	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	4,564.00	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	4,464.00	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	4,364.00	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	4,264.00	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	4,164.00	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	4,064.00	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	3,964.00	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	3,864.00	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	3,764.00	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	3,664.00	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	3,564.00	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	3,464.00	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	3,364.00	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	3,264.00	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	3,164.00	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	3,064.00	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	2,964.00	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	2,864.00	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	2,764.00	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	2,664.00	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	2,564.00	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	2,464.00	0.0	0.0	0.0	0.00	0.00	0.00
<b>START NUDGE (2°/100ft BUR)</b>										
2,250.0	0.00	0.00	2,250.0	2,414.00	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	1.00	71.91	2,300.0	2,364.00	0.1	0.4	-0.1	2.00	2.00	0.00
2,400.0	3.00	71.91	2,399.9	2,264.07	1.2	3.7	-0.6	2.00	2.00	0.00
2,500.0	5.00	71.91	2,499.7	2,164.32	3.4	10.4	-1.6	2.00	2.00	0.00
2,600.0	7.00	71.91	2,599.1	2,064.87	6.6	20.3	-3.1	2.00	2.00	0.00
2,700.0	9.00	71.91	2,698.2	1,965.85	11.0	33.5	-5.1	2.00	2.00	0.00
2,800.0	11.00	71.91	2,796.6	1,867.37	16.3	50.0	-7.6	2.00	2.00	0.00
2,900.0	13.00	71.91	2,894.4	1,769.56	22.8	69.8	-10.6	2.00	2.00	0.00
3,000.0	15.00	71.91	2,991.5	1,672.54	30.3	92.8	-14.1	2.00	2.00	0.00
3,100.0	17.00	71.91	3,087.6	1,576.42	38.9	119.0	-18.1	2.00	2.00	0.00
3,200.0	19.00	71.91	3,182.7	1,481.32	48.5	148.4	-22.6	2.00	2.00	0.00
3,300.0	21.00	71.91	3,276.6	1,387.35	59.1	180.9	-27.5	2.00	2.00	0.00
3,400.0	23.00	71.91	3,369.4	1,294.64	70.7	216.5	-33.0	2.00	2.00	0.00
3,500.0	25.00	71.91	3,460.7	1,203.29	83.3	255.1	-38.9	2.00	2.00	0.00
<b>PARKMAN SANDSTONE</b>										
3,556.9	26.14	71.91	3,512.0	1,152.00	91.0	278.5	-42.4	2.00	2.00	0.00
3,600.0	27.00	71.91	3,550.6	1,113.41	97.0	296.8	-45.2	2.00	2.00	0.00
3,700.0	29.00	71.91	3,638.9	1,025.12	111.5	341.4	-52.0	2.00	2.00	0.00
<b>EOB TO 29.2° INC</b>										
3,709.9	29.20	71.91	3,647.5	1,016.47	113.0	346.0	-52.7	2.00	2.00	0.00
3,800.0	29.20	71.91	3,726.2	937.82	126.7	387.8	-59.1	0.00	0.00	0.00
3,900.0	29.20	71.91	3,813.5	850.53	141.8	434.2	-66.1	0.00	0.00	0.00
4,000.0	29.20	71.91	3,900.8	763.23	157.0	480.5	-73.2	0.00	0.00	0.00
4,100.0	29.20	71.91	3,988.1	675.94	172.1	526.9	-80.2	0.00	0.00	0.00
4,200.0	29.20	71.91	4,075.4	588.65	187.3	573.3	-87.3	0.00	0.00	0.00
4,300.0	29.20	71.91	4,162.6	501.35	202.4	619.6	-94.4	0.00	0.00	0.00
4,400.0	29.20	71.91	4,249.9	414.06	217.6	666.0	-101.4	0.00	0.00	0.00
<b>SUSSEX SANDSTONE</b>										
4,448.2	29.20	71.91	4,292.0	372.00	224.9	688.4	-104.8	0.00	0.00	0.00

# Planning Report



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<b>Well:</b>	EHRlich 5M-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #1		

## Planned Survey

MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,500.0	29.20	71.91	4,337.2	326.76	232.7	712.4	-108.5	0.00	0.00	0.00
4,600.0	29.20	71.91	4,424.5	239.47	247.9	758.8	-115.6	0.00	0.00	0.00
4,700.0	29.20	71.91	4,511.8	152.18	263.0	805.1	-122.6	0.00	0.00	0.00
<b>END OF TANGENT</b>										
<b>4,796.7</b>	<b>29.20</b>	<b>71.91</b>	<b>4,596.3</b>	<b>67.73</b>	<b>277.7</b>	<b>850.0</b>	<b>-129.4</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
4,800.0	29.13	71.91	4,599.1	64.88	278.2	851.5	-129.7	2.00	-2.00	0.00
4,900.0	27.13	71.91	4,687.3	-23.30	292.8	896.3	-136.5	2.00	-2.00	0.00
5,000.0	25.13	71.91	4,777.1	-113.07	306.5	938.2	-142.9	2.00	-2.00	0.00
5,100.0	23.13	71.91	4,868.3	-204.33	319.2	977.0	-148.8	2.00	-2.00	0.00
5,200.0	21.13	71.91	4,961.0	-296.96	330.9	1,012.9	-154.3	2.00	-2.00	0.00
5,300.0	19.13	71.91	5,054.8	-390.84	341.6	1,045.6	-159.2	2.00	-2.00	0.00
5,400.0	17.13	71.91	5,149.9	-485.87	351.2	1,075.2	-163.7	2.00	-2.00	0.00
5,500.0	15.13	71.91	5,245.9	-581.93	359.9	1,101.6	-167.8	2.00	-2.00	0.00
5,600.0	13.13	71.91	5,342.9	-678.89	367.4	1,124.8	-171.3	2.00	-2.00	0.00
5,700.0	11.13	71.91	5,440.7	-776.66	374.0	1,144.8	-174.3	2.00	-2.00	0.00
5,800.0	9.13	71.91	5,539.1	-875.09	379.4	1,161.5	-176.9	2.00	-2.00	0.00
5,900.0	7.13	71.91	5,638.1	-974.08	383.8	1,174.9	-178.9	2.00	-2.00	0.00
6,000.0	5.13	71.91	5,737.5	-1,073.50	387.1	1,185.1	-180.5	2.00	-2.00	0.00
6,100.0	3.13	71.91	5,837.2	-1,173.24	389.4	1,191.9	-181.5	2.00	-2.00	0.00
6,200.0	1.13	71.91	5,937.2	-1,273.16	390.5	1,195.5	-182.1	2.00	-2.00	0.00
<b>EOD TO VERTICAL</b>										
<b>6,256.6</b>	<b>0.00</b>	<b>0.00</b>	<b>5,993.8</b>	<b>-1,329.80</b>	<b>390.7</b>	<b>1,196.0</b>	<b>-182.1</b>	<b>2.00</b>	<b>-2.00</b>	<b>0.00</b>
<b>KOP (8°/100ft BUR)</b>										
<b>6,286.6</b>	<b>0.00</b>	<b>0.00</b>	<b>6,023.8</b>	<b>-1,359.80</b>	<b>390.7</b>	<b>1,196.0</b>	<b>-182.1</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
6,300.0	1.07	180.00	6,037.2	-1,373.16	390.6	1,196.0	-182.0	8.00	8.00	0.00
6,400.0	9.07	180.00	6,136.7	-1,472.69	381.7	1,196.0	-173.3	8.00	8.00	0.00
6,500.0	17.07	180.00	6,234.0	-1,570.02	359.2	1,196.0	-151.1	8.00	8.00	0.00
6,600.0	25.07	180.00	6,327.3	-1,663.26	323.2	1,196.0	-115.7	8.00	8.00	0.00
6,700.0	33.07	180.00	6,414.6	-1,750.59	274.7	1,196.0	-67.8	8.00	8.00	0.00
6,800.0	41.07	180.00	6,494.3	-1,830.32	214.5	1,196.0	-8.5	8.00	8.00	0.00
<b>SHARON SPRINGS</b>										
<b>6,851.7</b>	<b>45.20</b>	<b>180.00</b>	<b>6,532.0</b>	<b>-1,868.00</b>	<b>179.2</b>	<b>1,196.0</b>	<b>26.3</b>	<b>8.00</b>	<b>8.00</b>	<b>0.00</b>
6,900.0	49.07	180.00	6,564.9	-1,900.88	143.7	1,196.0	61.3	8.00	8.00	0.00
<b>NIORARA A</b>										
<b>6,951.2</b>	<b>53.16</b>	<b>180.00</b>	<b>6,597.0</b>	<b>-1,933.00</b>	<b>103.9</b>	<b>1,196.0</b>	<b>100.5</b>	<b>8.00</b>	<b>8.00</b>	<b>0.00</b>
7,000.0	57.07	180.00	6,624.9	-1,960.92	63.9	1,196.0	140.0	8.00	8.00	0.00
7,100.0	65.07	180.00	6,673.3	-2,009.26	-23.6	1,196.0	226.2	8.00	8.00	0.00
<b>NIORARA B</b>										
<b>7,177.3</b>	<b>71.25</b>	<b>180.00</b>	<b>6,702.0</b>	<b>-2,038.00</b>	<b>-95.3</b>	<b>1,196.0</b>	<b>296.8</b>	<b>8.00</b>	<b>8.00</b>	<b>0.00</b>
7,200.0	73.07	180.00	6,709.0	-2,044.95	-116.9	1,196.0	318.1	8.00	8.00	0.00
7,300.0	81.07	180.00	6,731.3	-2,067.31	-214.3	1,196.0	414.1	8.00	8.00	0.00
7,400.0	89.07	180.00	6,739.9	-2,075.90	-313.9	1,196.0	512.2	8.00	8.00	0.00
<b>HZ LANDING PNT *NEW*: 736.1ft FSL &amp; 2293.2ft FWL of Sec 5</b>										
<b>7,416.5</b>	<b>90.39</b>	<b>180.00</b>	<b>6,740.0</b>	<b>-2,075.98</b>	<b>-330.4</b>	<b>1,196.0</b>	<b>528.5</b>	<b>8.00</b>	<b>8.00</b>	<b>0.00</b>
7,500.0	90.39	180.00	6,739.4	-2,075.41	-413.9	1,196.0	610.8	0.00	0.00	0.00
7,600.0	90.39	180.00	6,738.7	-2,074.73	-513.9	1,196.0	709.3	0.00	0.00	0.00
7,700.0	90.39	180.00	6,738.1	-2,074.05	-613.9	1,196.0	807.8	0.00	0.00	0.00
7,800.0	90.39	180.00	6,737.4	-2,073.37	-713.8	1,196.0	906.4	0.00	0.00	0.00
7,900.0	90.39	180.00	6,736.7	-2,072.69	-813.8	1,196.0	1,004.9	0.00	0.00	0.00
8,000.0	90.39	180.00	6,736.0	-2,072.01	-913.8	1,196.0	1,103.5	0.00	0.00	0.00
8,100.0	90.39	180.00	6,735.3	-2,071.33	-1,013.8	1,196.0	1,202.0	0.00	0.00	0.00
8,200.0	90.39	180.00	6,734.6	-2,070.65	-1,113.8	1,196.0	1,300.6	0.00	0.00	0.00
8,300.0	90.39	180.00	6,734.0	-2,069.97	-1,213.8	1,196.0	1,399.1	0.00	0.00	0.00



# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well EHRlich 5M-243
<b>Company:</b>	PDC ENERGY	<b>TVD Reference:</b>	KB-EST @ 4664.0usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO	<b>MD Reference:</b>	KB-EST @ 4664.0usft (Original Well Elev)
<b>Site:</b>	NW NW SEC. 5 T5N R64W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	EHRlich 5M-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #1		

Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,400.0	90.39	180.00	6,733.3	-2,069.29	-1,313.8	1,196.0	1,497.7	0.00	0.00	0.00
8,500.0	90.39	180.00	6,732.6	-2,068.61	-1,413.8	1,196.0	1,596.2	0.00	0.00	0.00
8,600.0	90.39	180.00	6,731.9	-2,067.92	-1,513.8	1,196.0	1,694.8	0.00	0.00	0.00
8,700.0	90.39	180.00	6,731.2	-2,067.24	-1,613.8	1,196.0	1,793.3	0.00	0.00	0.00
8,800.0	90.39	180.00	6,730.6	-2,066.56	-1,713.8	1,196.0	1,891.9	0.00	0.00	0.00
8,900.0	90.39	180.00	6,729.9	-2,065.88	-1,813.8	1,196.0	1,990.4	0.00	0.00	0.00
9,000.0	90.39	180.00	6,729.2	-2,065.20	-1,913.8	1,196.0	2,089.0	0.00	0.00	0.00
9,100.0	90.39	180.00	6,728.5	-2,064.52	-2,013.8	1,196.0	2,187.5	0.00	0.00	0.00
9,200.0	90.39	180.00	6,727.8	-2,063.84	-2,113.8	1,196.0	2,286.1	0.00	0.00	0.00
9,300.0	90.39	180.00	6,727.2	-2,063.16	-2,213.8	1,196.0	2,384.6	0.00	0.00	0.00
9,400.0	90.39	180.00	6,726.5	-2,062.48	-2,313.8	1,196.0	2,483.2	0.00	0.00	0.00
9,500.0	90.39	180.00	6,725.8	-2,061.80	-2,413.8	1,196.0	2,581.7	0.00	0.00	0.00
9,600.0	90.39	180.00	6,725.1	-2,061.12	-2,513.8	1,196.0	2,680.3	0.00	0.00	0.00
9,700.0	90.39	180.00	6,724.4	-2,060.44	-2,613.8	1,196.0	2,778.8	0.00	0.00	0.00
9,800.0	90.39	180.00	6,723.8	-2,059.76	-2,713.8	1,196.0	2,877.4	0.00	0.00	0.00
9,900.0	90.39	180.00	6,723.1	-2,059.08	-2,813.8	1,196.0	2,975.9	0.00	0.00	0.00
10,000.0	90.39	180.00	6,722.4	-2,058.40	-2,913.8	1,196.0	3,074.5	0.00	0.00	0.00
10,100.0	90.39	180.00	6,721.7	-2,057.71	-3,013.8	1,196.0	3,173.0	0.00	0.00	0.00
10,200.0	90.39	180.00	6,721.0	-2,057.03	-3,113.8	1,196.0	3,271.6	0.00	0.00	0.00
10,300.0	90.39	180.00	6,720.4	-2,056.35	-3,213.8	1,196.0	3,370.1	0.00	0.00	0.00
10,400.0	90.39	180.00	6,719.7	-2,055.67	-3,313.8	1,196.0	3,468.7	0.00	0.00	0.00
10,500.0	90.39	180.00	6,719.0	-2,054.99	-3,413.8	1,196.0	3,567.2	0.00	0.00	0.00
10,600.0	90.39	180.00	6,718.3	-2,054.31	-3,513.8	1,196.0	3,665.7	0.00	0.00	0.00
10,700.0	90.39	180.00	6,717.6	-2,053.63	-3,613.8	1,196.0	3,764.3	0.00	0.00	0.00
10,800.0	90.39	180.00	6,717.0	-2,052.95	-3,713.8	1,196.0	3,862.8	0.00	0.00	0.00
10,900.0	90.39	180.00	6,716.3	-2,052.27	-3,813.8	1,196.0	3,961.4	0.00	0.00	0.00
11,000.0	90.39	180.00	6,715.6	-2,051.59	-3,913.8	1,196.0	4,059.9	0.00	0.00	0.00
11,100.0	90.39	180.00	6,714.9	-2,050.91	-4,013.8	1,196.0	4,158.5	0.00	0.00	0.00
11,200.0	90.39	180.00	6,714.2	-2,050.23	-4,113.8	1,196.0	4,257.0	0.00	0.00	0.00
11,300.0	90.39	180.00	6,713.5	-2,049.55	-4,213.8	1,196.0	4,355.6	0.00	0.00	0.00
11,400.0	90.39	180.00	6,712.9	-2,048.87	-4,313.8	1,196.0	4,454.1	0.00	0.00	0.00
11,500.0	90.39	180.00	6,712.2	-2,048.19	-4,413.8	1,196.0	4,552.7	0.00	0.00	0.00
11,600.0	90.39	180.00	6,711.5	-2,047.50	-4,513.8	1,196.0	4,651.2	0.00	0.00	0.00
11,700.0	90.39	180.00	6,710.8	-2,046.82	-4,613.8	1,196.0	4,749.8	0.00	0.00	0.00
11,800.0	90.39	180.00	6,710.1	-2,046.14	-4,713.8	1,196.0	4,848.3	0.00	0.00	0.00
11,900.0	90.39	180.00	6,709.5	-2,045.46	-4,813.8	1,196.0	4,946.9	0.00	0.00	0.00
12,000.0	90.39	180.00	6,708.8	-2,044.78	-4,913.8	1,196.0	5,045.4	0.00	0.00	0.00
12,100.0	90.39	180.00	6,708.1	-2,044.10	-5,013.7	1,196.0	5,144.0	0.00	0.00	0.00
12,200.0	90.39	180.00	6,707.4	-2,043.42	-5,113.7	1,196.0	5,242.5	0.00	0.00	0.00
12,300.0	90.39	180.00	6,706.7	-2,042.74	-5,213.7	1,196.0	5,341.1	0.00	0.00	0.00
12,400.0	90.39	180.00	6,706.1	-2,042.06	-5,313.7	1,196.0	5,439.6	0.00	0.00	0.00
12,500.0	90.39	180.00	6,705.4	-2,041.38	-5,413.7	1,196.0	5,538.2	0.00	0.00	0.00
12,600.0	90.39	180.00	6,704.7	-2,040.70	-5,513.7	1,196.0	5,636.7	0.00	0.00	0.00
12,700.0	90.39	180.00	6,704.0	-2,040.02	-5,613.7	1,196.0	5,735.3	0.00	0.00	0.00
12,800.0	90.39	180.00	6,703.3	-2,039.34	-5,713.7	1,196.0	5,833.8	0.00	0.00	0.00
12,900.0	90.39	180.00	6,702.7	-2,038.66	-5,813.7	1,196.0	5,932.4	0.00	0.00	0.00
13,000.0	90.39	180.00	6,702.0	-2,037.98	-5,913.7	1,196.0	6,030.9	0.00	0.00	0.00
13,100.0	90.39	180.00	6,701.3	-2,037.29	-6,013.7	1,196.0	6,129.5	0.00	0.00	0.00
13,200.0	90.39	180.00	6,700.6	-2,036.61	-6,113.7	1,196.0	6,228.0	0.00	0.00	0.00
13,300.0	90.39	180.00	6,699.9	-2,035.93	-6,213.7	1,196.0	6,326.5	0.00	0.00	0.00
13,400.0	90.39	180.00	6,699.3	-2,035.25	-6,313.7	1,196.0	6,425.1	0.00	0.00	0.00
13,500.0	90.39	180.00	6,698.6	-2,034.57	-6,413.7	1,196.0	6,523.6	0.00	0.00	0.00
13,600.0	90.39	180.00	6,697.9	-2,033.89	-6,513.7	1,196.0	6,622.2	0.00	0.00	0.00
13,700.0	90.39	180.00	6,697.2	-2,033.21	-6,613.7	1,196.0	6,720.7	0.00	0.00	0.00



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well EHRlich 5M-243
<b>Company:</b>	PDC ENERGY	<b>TVD Reference:</b>	KB-EST @ 4664.0usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO	<b>MD Reference:</b>	KB-EST @ 4664.0usft (Original Well Elev)
<b>Site:</b>	NW NW SEC. 5 T5N R64W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	EHRlich 5M-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #1		

## Planned Survey

MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,800.0	90.39	180.00	6,696.5	-2,032.53	-6,713.7	1,196.0	6,819.3	0.00	0.00	0.00
13,900.0	90.39	180.00	6,695.8	-2,031.85	-6,813.7	1,196.0	6,917.8	0.00	0.00	0.00
14,000.0	90.39	180.00	6,695.2	-2,031.17	-6,913.7	1,196.0	7,016.4	0.00	0.00	0.00
<b>BHL: 2130ft FNL &amp; 2336ft FWL of Sec 8</b>										
<b>14,034.1</b>	<b>90.39</b>	<b>180.00</b>	<b>6,695.0</b>	<b>-2,031.00</b>	<b>-6,947.8</b>	<b>1,196.0</b>	<b>7,050.0</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

## Formations

MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,556.9	3,512.0	PARKMAN SANDSTONE			
4,448.2	4,292.0	SUSSEX SANDSTONE			
6,851.7	6,532.0	SHARON SPRINGS			
6,951.2	6,597.0	NIOBRARA A			
7,177.3	6,702.0	NIOBRARA B			

## Plan Annotations

MD (usft)	TVD (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
0.0	0.0	0.0	0.0	SHL: 386ft FNL & 1098ft FWL of Sec 5
2,250.0	2,250.0	0.0	0.0	START NUDGE (2°/100ft BUR)
3,709.9	3,647.5	113.0	346.0	EOB TO 29.2° INC
4,796.7	4,596.3	277.7	850.0	END OF TANGENT
6,256.6	5,993.8	390.7	1,196.0	EOD TO VERTICAL
6,286.6	6,023.8	390.7	1,196.0	KOP (8°/100ft BUR)
7,416.5	6,740.0	-330.4	1,196.0	HZ LANDING PNT *NEW*: 736.1ft FSL & 2293.2ft FWL of Sec 5
14,034.1	6,695.0	-6,947.8	1,196.0	BHL: 2130ft FNL & 2336ft FWL of Sec 8