

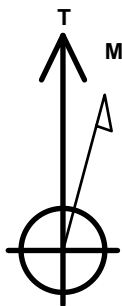
PDC Energy Inc. DJ Basin

Well Name: **Jagged 4N**

Surface Location: Jagged 4N64W08 Pad Sec.8-T4N-R64W
 North American Datum 1983 , US State Plane 1983 Colorado Northern Zone
 Ground Elevation: 4772.0
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.0 0.0 1362800.42 3257744.00 40.325600 -104.575560
 Original Well Elev WELL @ 4795.0ft (Original Well Elev)

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 2166'FSL, 2350'FWL, SEC.8	1.0	0.0	0.0	Point
BHL 2144'FSL, 2297'FWL, SEC.7	6825.0	-74.0	-5087.4	Point
LPL 2144'FSL, 1908'FWL, SEC.8	6825.0	-25.7	-443.1	Point



Azimuths to True North
 Magnetic North: 7.94°

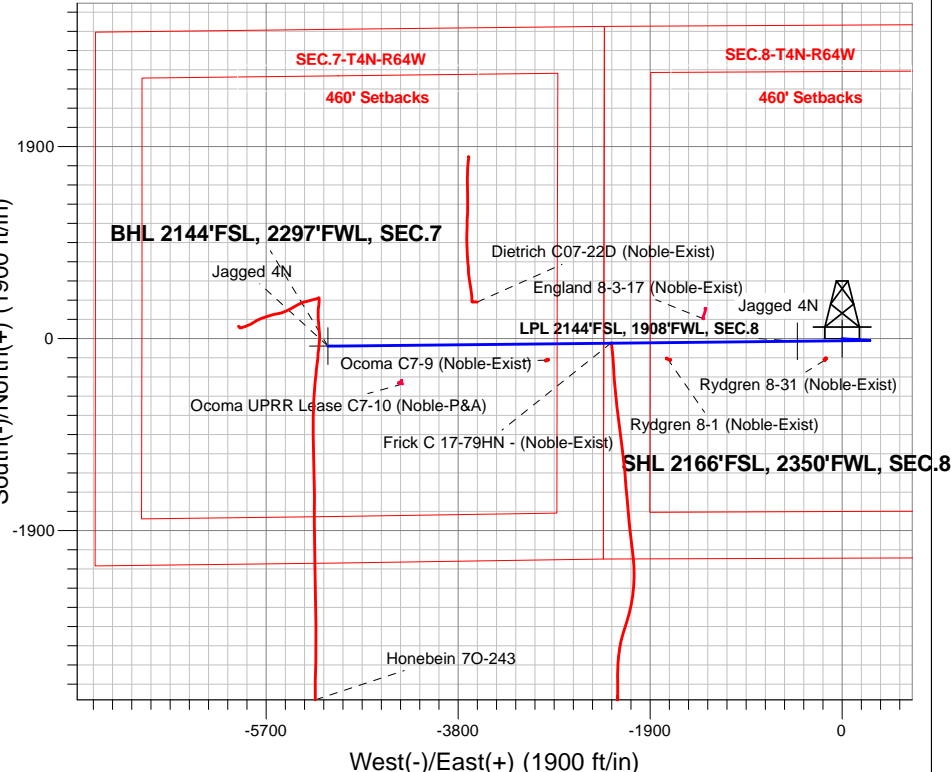
Magnetic Field
 Strength: 52476.4snT
 Dip Angle: 66.81°
 Date: 6/28/2017
 Model: IGRF2010

Jagged 4N64W08 Pad Sec.8-T4N-R64W
 Jagged 4N
 Plan #2 (6-27-17)
 8:56, June 28 2017

ANNOTATIONS

TVD	MD	Annotation
800.0	800.0	KOP - Start Build 1.50
3728.3	3740.5	Start Drop -2.00
6109.0	6121.6	Start Build 8.00
6825.0	7246.3	Start 1.1 hold at 7246.3 MD
6825.0	7247.4	Start 4644.6 hold at 7247.4 MD
6825.0	11892.0	TD at 11892.0

South(-)/North(+) (1900 ft/in)

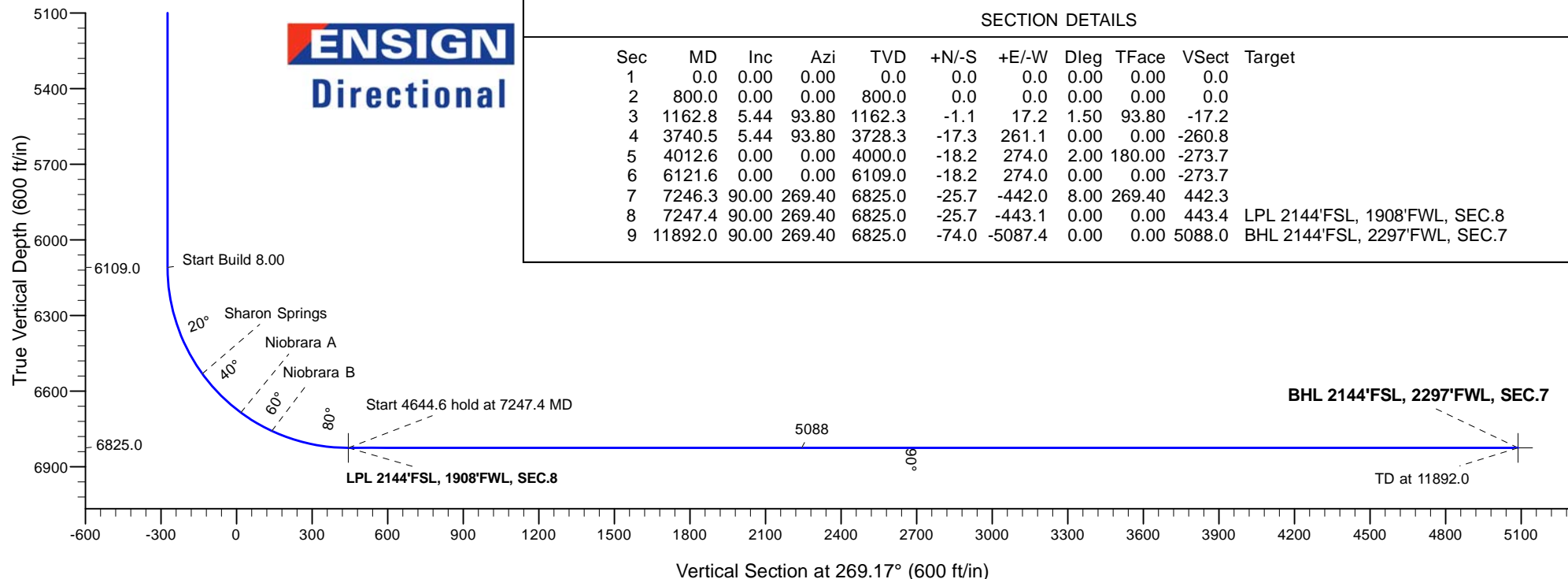


West(-)/East(+) (1900 ft/in)

ENSIGN
 Directional

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.0	
3	1162.8	5.44	93.80	1162.3	-1.1	17.2	1.50	93.80	-17.2	
4	3740.5	5.44	93.80	3728.3	-17.3	261.1	0.00	0.00	-260.8	
5	4012.6	0.00	0.00	4000.0	-18.2	274.0	2.00	180.00	-273.7	
6	6121.6	0.00	0.00	6109.0	-18.2	274.0	0.00	0.00	-273.7	
7	7246.3	90.00	269.40	6825.0	-25.7	-442.0	8.00	269.40	442.3	
8	7247.4	90.00	269.40	6825.0	-25.7	-443.1	0.00	0.00	443.4	LPL 2144'FSL, 1908'FWL, SEC.8
9	11892.0	90.00	269.40	6825.0	-74.0	-5087.4	0.00	0.00	5088.0	BHL 2144'FSL, 2297'FWL, SEC.7



PDC Energy Inc. DJ Basin

SEC.8-T4N-R64W

Jagged 4N64W08 Pad Sec.8-T4N-R64W

Jagged 4N

Wellbore #1

Plan #2 (6-27-17)

Anticollision Report

28 June, 2017

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 4N
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 4N	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (6-27-17)	Offset TVD Reference:	Offset Datum

Reference	Plan #2 (6-27-17)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 800.0 ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.45 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	6/28/2017		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,892.0	Plan #2 (6-27-17) (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						
Dietrich C07-18 Pad Sec.7-T4N-R64W						
Dietrich C07-22D (Noble-Exist) - Wellbore #1 - Wellbore	10,429.4	7,097.9	421.9	271.9	2.813	CC, ES
Dietrich C07-22D (Noble-Exist) - Wellbore #1 - Wellbore	10,500.0	7,094.7	427.8	275.4	2.808	SF
Existing Wells Sec.7-T4N-R64W						
Ocoma C7-9 (Noble-Exist) - Wellbore #1 - Wellbore #1	9,737.6	6,874.6	161.9	41.0	1.340	Level 3, CC, ES, SF
Existing Wells Sec.7-T4N-R64W (GRID)						
Ocoma UPRR Lease C7-10 (Noble-P&A) - Wellbore #1 -	11,168.8	6,873.2	368.1	198.6	2.171	CC, ES
Ocoma UPRR Lease C7-10 (Noble-P&A) - Wellbore #1 -	11,200.0	6,872.3	369.4	198.8	2.165	SF
Existing Wells Sec.8-T4N-R64W						
Rydgren 8-1 (Noble-Exist) - Wellbore #1 - Wellbore #1	8,537.8	6,849.8	154.1	72.8	1.895	CC, ES, SF
Existing Wells Sec.8-T4N-R64W (GRID)						
England 8-3-17 (Noble-Exist) - Wellbore #1 - Wellbore #1	8,173.8	6,839.7	235.3	166.2	3.406	CC, ES
England 8-3-17 (Noble-Exist) - Wellbore #1 - Wellbore #1	8,200.0	6,839.5	236.8	166.8	3.386	SF
Rydgren 8-31 (Noble-Exist) - Wellbore #1 - Wellbore #1	6,972.4	6,751.2	192.4	156.2	5.313	CC, ES
Rydgren 8-31 (Noble-Exist) - Wellbore #1 - Wellbore #1	7,000.0	6,761.2	194.1	157.5	5.302	SF
Frick Pad 18-4N-64W						
Frick C 17-79HN - (Noble-Exist) - API #05-123-33279 - M	9,087.2	10,730.2	67.4	6.9	1.115	Level 2, CC, ES, SF
Honebein 4N64W7K Pad Sec.7-T4N-R64W						
Honebein 7O-243 - Wellbore #1 - Wellbore #1	11,892.0	7,199.9	100.7	-18.7	0.843	Level 1, CC, ES, SF

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 4N
Project:	SEC.8-T4N-R64W	TVD Reference:	WELL @ 4795.0ft (Original Well Elev)
Reference Site:	Jagged 4N64W08 Pad Sec.8-T4N-R64W	MD Reference:	WELL @ 4795.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Jagged 4N	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.45 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #2 (6-27-17)	Offset TVD Reference:	Offset Datum

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						
Jagged 4N64W08 Pad Sec.8-T4N-R64W						
Jagged 10N - Wellbore #1 - Plan #2 (6-27-17)	567.2	567.8	90.3	87.5	32.336	CC
Jagged 10N - Wellbore #1 - Plan #2 (6-27-17)	600.0	600.4	90.4	87.4	30.383	ES
Jagged 10N - Wellbore #1 - Plan #2 (6-27-17)	1,000.0	992.4	115.0	109.4	20.637	SF
Jagged 1N - Wellbore #1 - Plan #3 (6-27-17)	200.0	200.0	44.6	43.8	54.009	CC
Jagged 1N - Wellbore #1 - Plan #3 (6-27-17)	300.0	299.6	45.0	43.6	32.695	ES
Jagged 1N - Wellbore #1 - Plan #3 (6-27-17)	11,892.0	12,031.9	769.4	412.7	2.157	SF
Jagged 2N - Wellbore #1 - Plan #3 (6-27-17)	400.0	400.0	27.9	26.0	14.467	CC, ES
Jagged 2N - Wellbore #1 - Plan #3 (6-27-17)	11,892.0	11,923.3	518.3	159.8	1.446	Level 3, SF
Jagged 3N - Wellbore #1 - Plan #3 (6-27-17)	600.0	600.0	13.9	10.9	4.594	CC
Jagged 3N - Wellbore #1 - Plan #3 (6-27-17)	11,892.0	11,972.8	267.7	-78.6	0.773	Level 1, ES, SF
Jagged 5N - Wellbore #1 - Plan #2 (6-27-17)	800.0	800.0	16.7	12.6	4.051	CC
Jagged 5N - Wellbore #1 - Plan #2 (6-27-17)	11,892.0	12,007.3	295.2	-38.6	0.884	Level 1, ES, SF
Jagged 6N - Wellbore #1 - Plan #2 (6-27-17)	800.0	800.0	30.7	26.5	7.426	CC, ES
Jagged 6N - Wellbore #1 - Plan #2 (6-27-17)	11,892.0	11,911.0	534.0	176.5	1.494	Level 3, SF
Jagged 7N - Wellbore #1 - Plan #3 (6-27-17)	800.0	800.0	47.4	43.3	11.477	CC, ES
Jagged 7N - Wellbore #1 - Plan #3 (6-27-17)	11,892.0	12,053.9	783.5	429.9	2.216	SF
Jagged 8N - Wellbore #1 - Plan #2 (6-27-17)	845.3	846.2	59.7	55.4	13.964	CC, ES
Jagged 8N - Wellbore #1 - Plan #2 (6-27-17)	1,100.0	1,099.8	70.1	64.5	12.444	SF
Jagged 9C - Wellbore #1 - Plan #3 (6-27-17)	780.4	781.0	72.8	68.9	18.604	CC
Jagged 9C - Wellbore #1 - Plan #3 (6-27-17)	800.0	800.5	72.9	68.9	18.124	ES
Jagged 9C - Wellbore #1 - Plan #3 (6-27-17)	1,000.0	998.2	82.2	76.9	15.700	SF

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 286- Dietrich C07-18 Pad Sec.7-T4N-R64W - Dietrich C07-22D (Noble-Exist) - Wellbore #1 - Wellbore #1													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (ft)	Separation Factor	Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
9,800.0	6,825.0	7,126.4	6,889.5	107.8	35.7	93.99	363.0	-3,628.1	757.2	628.5	128.74	5.882		
9,900.0	6,825.0	7,121.8	6,884.9	111.2	35.7	93.38	363.0	-3,628.3	676.6	544.4	132.14	5.120		
10,000.0	6,825.0	7,117.3	6,880.4	114.5	35.7	92.76	363.0	-3,628.5	601.7	466.2	135.53	4.440		
10,100.0	6,825.0	7,112.8	6,875.8	117.9	35.7	92.15	363.1	-3,628.7	535.1	396.2	138.92	3.852		
10,200.0	6,825.0	7,108.2	6,871.3	121.3	35.7	91.54	363.1	-3,628.9	480.2	337.9	142.30	3.374		
10,300.0	6,825.0	7,103.7	6,866.8	124.7	35.7	90.92	363.1	-3,629.1	441.3	295.6	145.66	3.030		
10,400.0	6,825.0	7,099.2	6,862.3	128.1	35.7	90.31	363.1	-3,629.3	422.9	273.9	149.01	2.838		
10,429.4	6,825.0	7,097.9	6,861.0	129.1	35.7	90.14	363.1	-3,629.4	421.9	271.9	150.00	2.813	CC, ES	
10,500.0	6,825.0	7,094.7	6,857.8	131.5	35.6	89.71	363.1	-3,629.5	427.8	275.4	152.35	2.808	SF	
10,600.0	6,825.0	7,090.3	6,853.4	134.9	35.6	89.10	363.1	-3,629.7	455.0	299.3	155.68	2.923		
10,700.0	6,825.0	7,085.8	6,848.9	138.3	35.6	88.50	363.1	-3,629.9	501.1	342.1	158.99	3.152		
10,800.0	6,825.0	7,081.4	6,844.5	141.8	35.6	87.89	363.1	-3,630.1	561.3	399.0	162.29	3.459		
10,900.0	6,825.0	7,076.9	6,840.1	145.2	35.6	87.29	363.1	-3,630.3	631.7	466.1	165.57	3.815		
11,000.0	6,825.0	7,072.5	6,835.6	148.6	35.6	86.70	363.1	-3,630.5	709.2	540.3	168.83	4.200		
11,100.0	6,825.0	7,068.0	6,831.1	152.0	35.6	86.09	363.2	-3,630.7	791.7	619.6	172.06	4.601		