

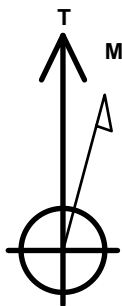
PDC Energy Inc. DJ Basin

Well Name: **Jagged 5N**

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 1362800.25 3257727.27 40.325600 -104.575620
 Original Well Elev WELL @ 4795.0ft (Original Well Elev)

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 2167'FSL, 2335'FWL, SEC.8	1.0	0.0	0.0	Point
BHL 1870'FSL, 2297'FWL, SEC.7	6935.0	-348.0	-5071.0	Point
LPL 1870'FSL, 1908'FWL, SEC.8	6935.0	-299.6	-427.0	Point



Azimuths to True North
 Magnetic North: 7.94°

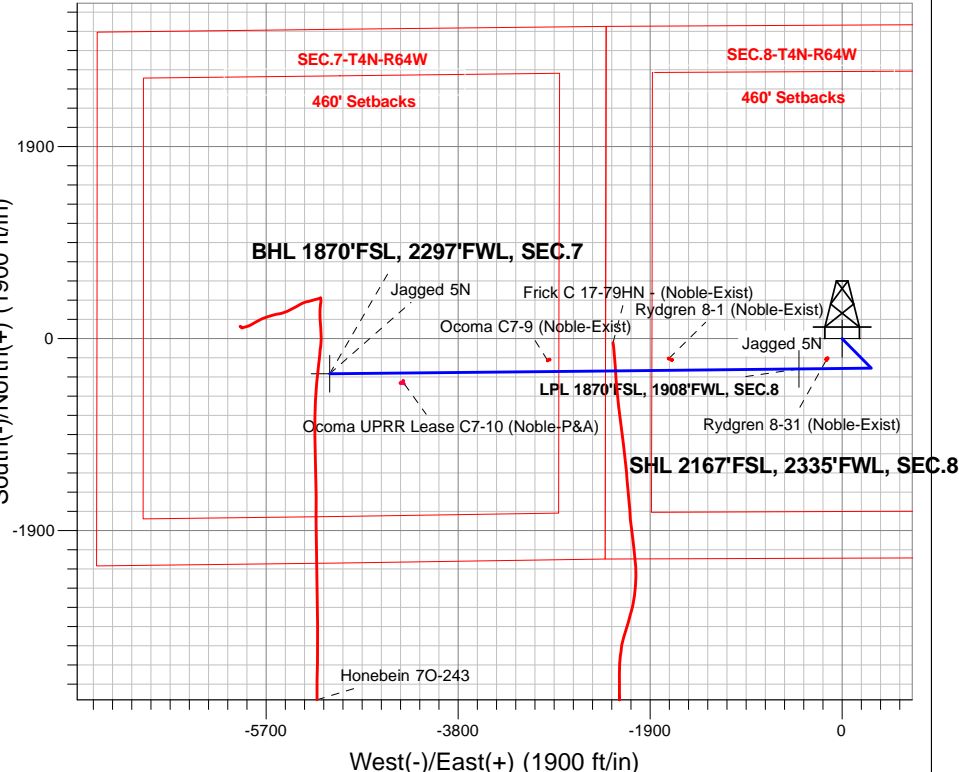
Magnetic Field
 Strength: 52476.4snT
 Dip Angle: 66.81°
 Date: 6/28/2017
 Model: IGRF2010

Jagged 4N64W08 Pad Sec.8-T4N-R64W
 Jagged 5N
 Plan #2 (6-27-17)
 9:10, June 28 2017

ANNOTATIONS

TVD	MD	Annotation
1000.0	1000.0	KOP - Start Build 1.50
4677.0	4698.8	Start Drop -2.00
6218.9	6241.4	Start Build 8.00
6935.0	7366.3	Start DLS 0.50 TFO 90.00
6935.0	7367.6	Start 4642.9 hold at 7367.6 MD
6935.0	12010.5	TD at 12010.5

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

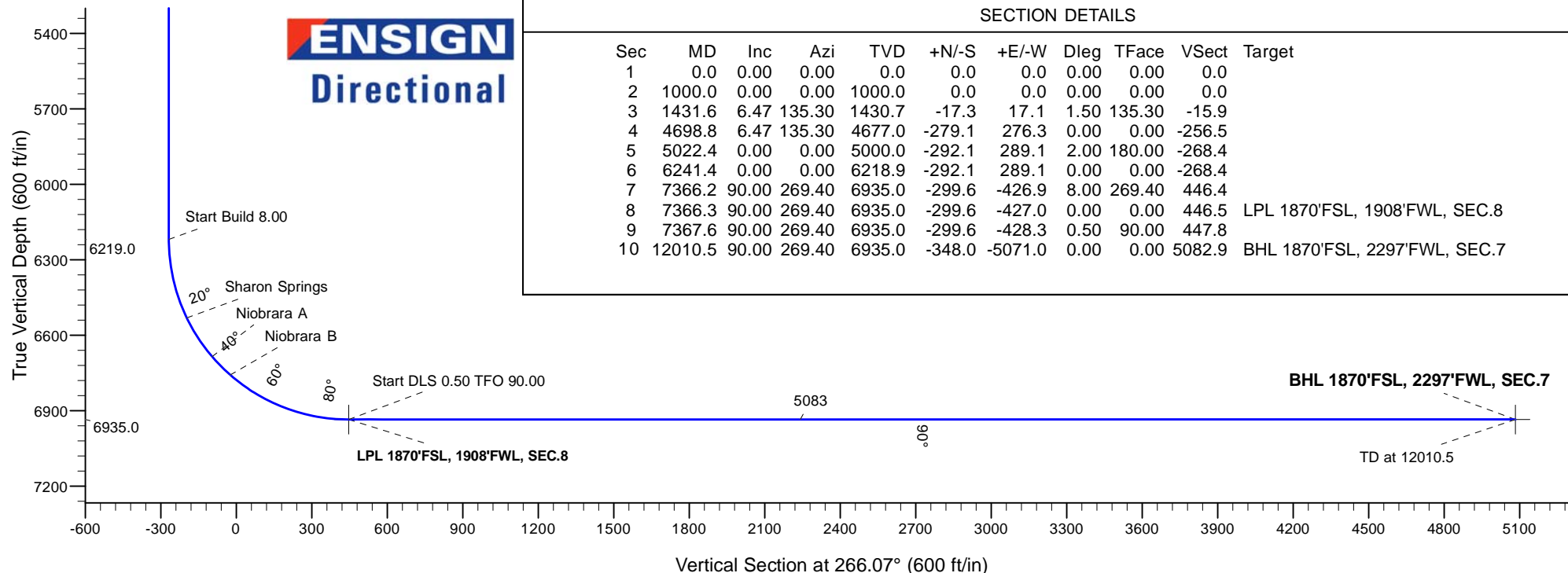


West(-)/East(+) (1900 ft/in)

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	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	
3	1431.6	6.47	135.30	1430.7	-17.3	17.1	1.50	135.30	-15.9	
4	4698.8	6.47	135.30	4677.0	-279.1	276.3	0.00	0.00	-256.5	
5	5022.4	0.00	0.00	5000.0	-292.1	289.1	2.00	180.00	-268.4	
6	6241.4	0.00	0.00	6218.9	-292.1	289.1	0.00	0.00	-268.4	
7	7366.2	90.00	269.40	6935.0	-299.6	-426.9	8.00	269.40	446.4	
8	7366.3	90.00	269.40	6935.0	-299.6	-427.0	0.00	0.00	446.5	LPL 1870'FSL, 1908'FWL, SEC.8
9	7367.6	90.00	269.40	6935.0	-299.6	-428.3	0.50	90.00	447.8	
10	12010.5	90.00	269.40	6935.0	-348.0	-5071.0	0.00	0.00	5082.9	BHL 1870'FSL, 2297'FWL, SEC.7

ENSIGN
 Directional



Vertical Section at 266.07° (600 ft/in)

PDC Energy Inc. DJ Basin

SEC.8-T4N-R64W

Jagged 4N64W08 Pad Sec.8-T4N-R64W

Jagged 5N

Wellbore #1

Plan #2 (6-27-17)

Anticollision Summary Report

28 June, 2017

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 5N
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 5N	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	12,010.5	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						
Existing Wells Sec.7-T4N-R64W						
Ocoma C7-9 (Noble-Exist) - Wellbore #1 - Wellbore #1	9,853.5	6,984.2	112.2	-8.6	0.929	Level 1, CC, ES, SF
Existing Wells Sec.7-T4N-R64W (GRID)						
Ocoma UPRR Lease C7-10 (Noble-P&A) - Wellbore #1 -	11,280.5	6,991.9	98.8	-70.5	0.584	Level 1, CC, ES, SF
Existing Wells Sec.8-T4N-R64W						
Rydgren 8-1 (Noble-Exist) - Wellbore #1 - Wellbore #1	8,652.4	6,961.2	119.3	38.2	1.471	Level 3, CC, ES, SF
Existing Wells Sec.8-T4N-R64W (GRID)						
Rydgren 8-31 (Noble-Exist) - Wellbore #1 - Wellbore #1	7,087.6	6,858.8	81.8	45.5	2.255	CC, ES, SF
Frick Pad 18-4N-64W						
Frick C 17-79HN - (Noble-Exist) - API #05-123-33279 - M	9,181.6	10,454.8	39.1	-19.0	0.673	Level 1, CC, ES, SF
Honebein 4N64W7K Pad Sec.7-T4N-R64W						
Honebein 7O-243 - Wellbore #1 - Wellbore #1	12,010.5	7,494.0	123.5	35.2	1.399	Level 3, CC, ES, SF

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Jagged 5N
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 5N	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)	532.2	532.6	73.9	71.3	28.317	CC
Jagged 10N - Wellbore #1 - Plan #2 (6-27-17)	600.0	600.0	74.2	71.2	24.719	ES
Jagged 10N - Wellbore #1 - Plan #2 (6-27-17)	1,000.0	991.5	100.9	95.1	17.509	SF
Jagged 1N - Wellbore #1 - Plan #3 (6-27-17)	200.0	200.0	61.3	60.5	74.263	CC
Jagged 1N - Wellbore #1 - Plan #3 (6-27-17)	300.0	299.5	61.7	60.4	44.903	ES
Jagged 1N - Wellbore #1 - Plan #3 (6-27-17)	900.0	889.9	100.2	95.2	20.021	SF
Jagged 2N - Wellbore #1 - Plan #3 (6-27-17)	400.0	400.0	44.6	42.7	23.147	CC, ES
Jagged 2N - Wellbore #1 - Plan #3 (6-27-17)	12,010.5	11,926.4	799.8	444.5	2.251	SF
Jagged 3N - Wellbore #1 - Plan #3 (6-27-17)	600.0	600.0	30.6	27.6	10.118	CC, ES
Jagged 3N - Wellbore #1 - Plan #3 (6-27-17)	12,010.5	11,976.4	533.9	176.6	1.494	Level 3, SF
Jagged 4N - Wellbore #1 - Plan #2 (6-27-17)	800.0	800.0	16.7	12.6	4.051	CC
Jagged 4N - Wellbore #1 - Plan #2 (6-27-17)	12,010.5	11,892.0	295.2	-38.7	0.884	Level 1, ES, SF
Jagged 6N - Wellbore #1 - Plan #2 (6-27-17)	1,000.0	1,000.0	13.9	8.7	2.665	CC
Jagged 6N - Wellbore #1 - Plan #2 (6-27-17)	12,010.5	11,913.4	286.3	-41.2	0.874	Level 1, ES, SF
Jagged 7N - Wellbore #1 - Plan #3 (6-27-17)	1,057.5	1,057.9	28.8	23.4	5.314	CC
Jagged 7N - Wellbore #1 - Plan #3 (6-27-17)	1,100.0	1,100.4	29.0	23.4	5.151	ES
Jagged 7N - Wellbore #1 - Plan #3 (6-27-17)	12,010.5	12,059.2	501.8	144.9	1.406	Level 3, SF
Jagged 8N - Wellbore #1 - Plan #2 (6-27-17)	921.1	921.5	42.5	37.8	9.089	CC, ES
Jagged 8N - Wellbore #1 - Plan #2 (6-27-17)	12,010.5	11,971.5	761.0	408.4	2.158	SF
Jagged 9C - Wellbore #1 - Plan #3 (6-27-17)	735.5	736.0	56.7	53.0	15.396	CC
Jagged 9C - Wellbore #1 - Plan #3 (6-27-17)	800.0	800.1	57.0	53.0	14.116	ES
Jagged 9C - Wellbore #1 - Plan #3 (6-27-17)	1,000.0	997.4	65.2	59.9	12.357	SF