

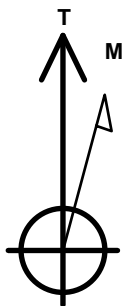
PDC Energy Inc. DJ Basin

Well Name: **Josephine 190-214**

Surface Location: Josephine 5N64W19N Pad Sec.19-T5N-R64W
 North American Datum 1983 , US State Plane 1983 Colorado Northern Zone
 Ground Elevation: 4626.0
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.0 0.0 1385081.46 3253129.66 40.386890 -104.591290
 Original Well Elev WELL @ 4649.0ft (Original Well Elev)

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 1819'FNL, 2215'FEL, SEC.19	1.0	0.0	0.0	Point
BHL 2073'FNL, 2455'FEL, SEC.24	6708.0	-243.5	-5410.0	Point
LPL 2073'FNL, 2052'FEL, SEC.19	6728.0	-258.6	166.9	Point



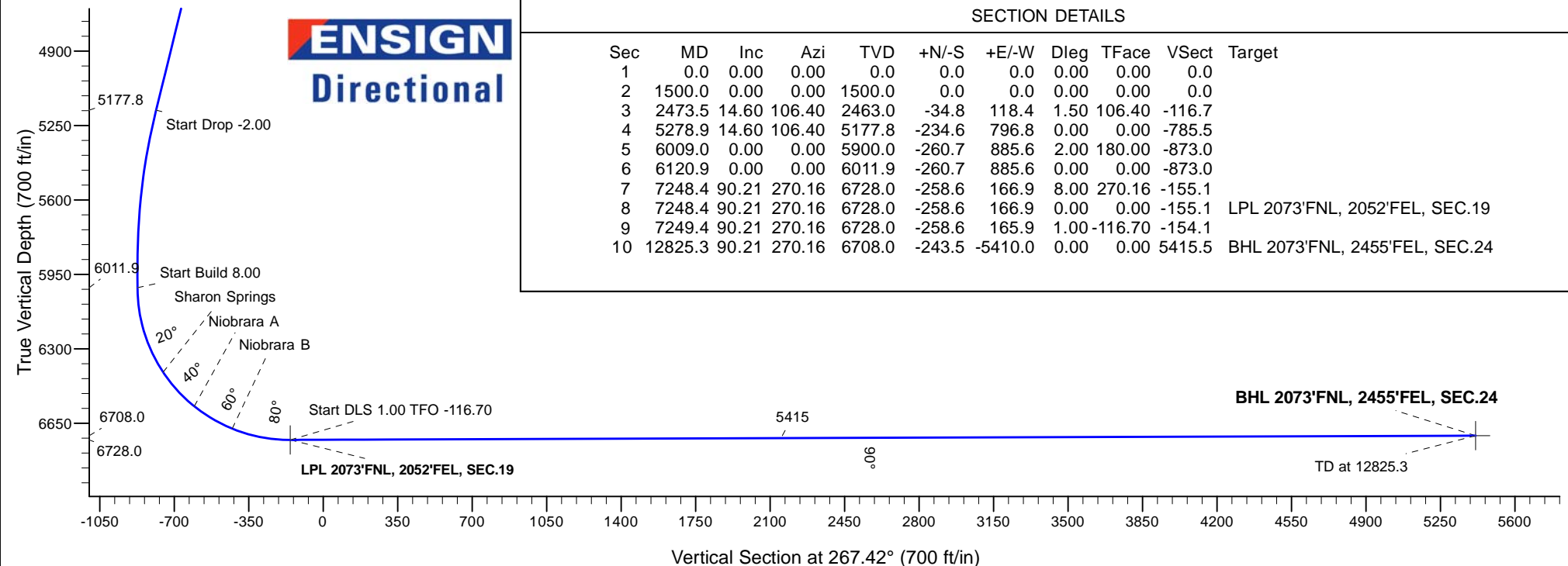
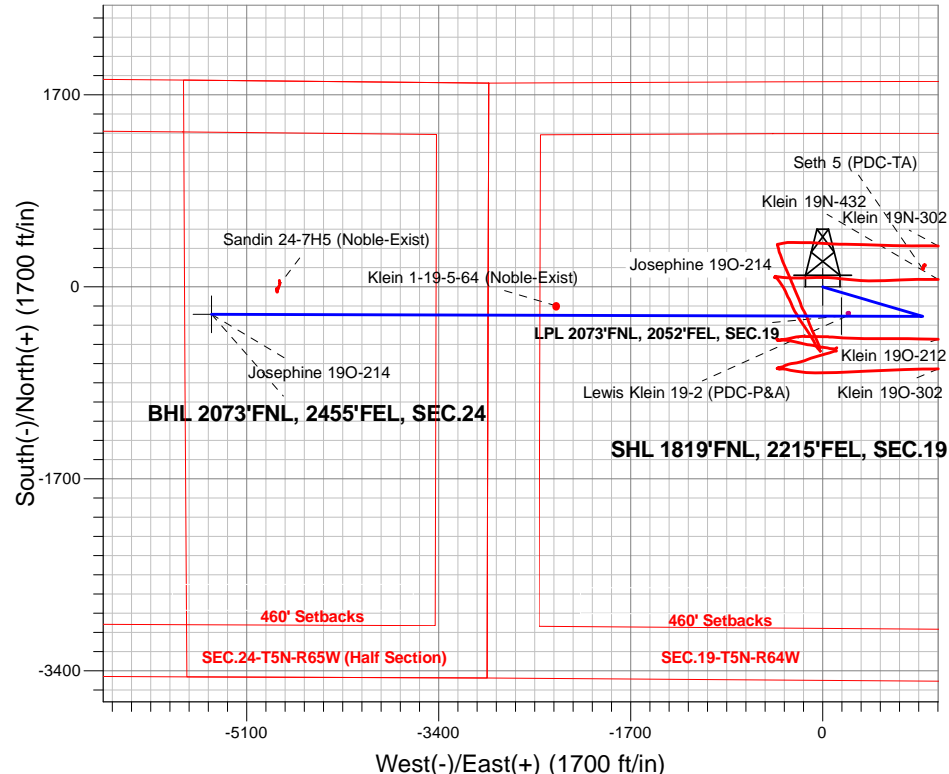
Azimuths to True North
 Magnetic North: 7.99°

Magnetic Field
 Strength: 52539.7snT
 Dip Angle: 66.87°
 Date: 3/10/2017
 Model: IGRF2010

Josephine 5N64W19N Pad Sec.19-T5N-R64W
 Josephine 190-214
 Plan #3 (3-09-17)
 11:10, March 10 2017

ANNOTATIONS

TVD	MD	Annotation
1500.0	1500.0	KOP - Start Build 1.50
5177.8	5278.9	Start Drop -2.00
6011.9	6120.9	Start Build 8.00
6728.0	7248.4	Start DLS 1.00 TFO -116.70
6728.0	7249.4	Start 5575.9 hold at 7249.4 MD
6708.0	12825.3	TD at 12825.3



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	1500.0	0.00	0.00	1500.0	0.0	0.0	0.00	0.00	0.0	
3	2473.5	14.60	106.40	2463.0	-34.8	118.4	1.50	106.40	-116.7	
4	5278.9	14.60	106.40	5177.8	-234.6	796.8	0.00	0.00	-785.5	
5	6009.0	0.00	0.00	5900.0	-260.7	885.6	2.00	180.00	-873.0	
6	6120.9	0.00	0.00	6011.9	-260.7	885.6	0.00	0.00	-873.0	
7	7248.4	90.21	270.16	6728.0	-258.6	166.9	8.00	270.16	-155.1	
8	7248.4	90.21	270.16	6728.0	-258.6	166.9	0.00	0.00	-155.1	LPL 2073'FNL, 2052'FEL, SEC.19
9	7249.4	90.21	270.16	6728.0	-258.6	165.9	1.00	-116.70	-154.1	
10	12825.3	90.21	270.16	6708.0	-243.5	-5410.0	0.00	0.00	5415.5	BHL 2073'FNL, 2455'FEL, SEC.24



PDC Energy Inc. DJ Basin

SEC.19-T5N-R64W

Josephine 5N64W19N Pad Sec.19-T5N-R64W

Josephine 19O-214

Wellbore #1

Plan #3 (3-09-17)

Anticollision Report

10 March, 2017



Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Josephine 190-214
Project:	SEC.19-T5N-R64W	TVD Reference:	WELL @ 4649.0ft (Original Well Elev)
Reference Site:	Josephine 5N64W19N Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4649.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Josephine 190-214	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 #3 (3-09-17)	Offset TVD Reference:	Offset Datum

Reference	Plan #3 (3-09-17)		
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 3/10/2017			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	12,825.3	Plan #3 (3-09-17) (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.19-T5N-R64W						
Klein 1-19-5-64 (Noble-Exist) - Wellbore #1 - Wellbore #1	9,775.1	6,701.9	84.3	-184.0	0.314	Level 1, CC, ES, SF
Lewis Klein 19-2 (PDC-P&A) - Wellbore #1 - Wellbore #1	7,191.3	6,703.4	18.4	-24.5	0.429	Level 1, CC, ES, SF
Seth 5 (PDC-TA) - Wellbore #1 - Wellbore #1	5,150.4	5,027.0	420.2	385.5	12.124	CC
Seth 5 (PDC-TA) - Wellbore #1 - Wellbore #1	5,200.0	5,074.8	420.4	385.3	11.990	ES
Seth 5 (PDC-TA) - Wellbore #1 - Wellbore #1	6,350.0	6,221.9	425.8	385.5	10.569	SF
Existing Wells Sec.24-T5N-R65W (GRID)						
Sandin 24-7H5 (Noble-Exist) - Wellbore #1 - Wellbore #1	12,246.0	6,694.2	227.4	23.3	1.114	Level 2, CC, ES, SF
Josephine 5N64W19N Pad Sec.19-T5N-R64W						
Josephine 19M-234 - Wellbore #1 - Plan #3 (3-09-17)	400.0	400.0	105.6	103.7	54.814	CC, ES
Josephine 19M-234 - Wellbore #1 - Plan #3 (3-09-17)	1,200.0	1,171.0	179.7	173.1	27.402	SF
Josephine 19M-334 - Wellbore #1 - Plan #3 (3-09-17)	600.0	600.0	91.1	88.1	30.073	CC, ES
Josephine 19M-334 - Wellbore #1 - Plan #3 (3-09-17)	1,100.0	1,087.8	118.5	112.8	20.528	SF
Josephine 19M-404 - Wellbore #1 - Plan #3 (3-09-17)	200.0	200.0	120.2	119.4	145.550	CC, ES
Josephine 19M-404 - Wellbore #1 - Plan #3 (3-09-17)	1,400.0	1,333.6	290.0	281.4	33.816	SF
Josephine 19N-204 - Wellbore #1 - Plan #3 (3-09-17)	1,400.0	1,400.0	29.1	21.7	3.921	CC
Josephine 19N-204 - Wellbore #1 - Plan #3 (3-09-17)	1,500.0	1,499.8	29.5	21.6	3.706	ES
Josephine 19N-204 - Wellbore #1 - Plan #3 (3-09-17)	12,825.3	12,819.4	557.4	142.9	1.345	Level 3, SF
Josephine 19N-214 - Wellbore #1 - Plan #3 (3-09-17)	800.0	800.0	72.9	68.7	17.644	CC, ES
Josephine 19N-214 - Wellbore #1 - Plan #3 (3-09-17)	1,200.0	1,193.4	88.5	82.2	14.044	SF
Josephine 19N-314 - Wellbore #1 - Plan #3 (3-09-17)	1,000.0	1,000.0	58.3	53.1	11.142	CC, ES
Josephine 19N-314 - Wellbore #1 - Plan #3 (3-09-17)	1,300.0	1,296.4	66.5	59.7	9.711	SF
Josephine 19N-334 - Wellbore #1 - Plan #3 (3-09-17)	1,500.0	1,500.0	14.6	6.6	1.826	CC
Josephine 19N-334 - Wellbore #1 - Plan #3 (3-09-17)	12,825.3	12,945.8	357.6	-46.5	0.885	Level 1, ES, SF
Josephine 19N-404 - Wellbore #1 - Plan #3 (3-09-17)	1,200.0	1,200.0	43.7	37.4	6.904	CC, ES
Josephine 19N-404 - Wellbore #1 - Plan #3 (3-09-17)	1,400.0	1,398.7	46.6	39.2	6.290	SF
Josephine 19O-204 - Wellbore #1 - Plan #3 (3-09-17)	500.0	500.0	29.3	26.8	11.813	CC, ES
Josephine 19O-204 - Wellbore #1 - Plan #3 (3-09-17)	12,825.3	12,907.9	535.7	120.3	1.290	Level 3, SF
Josephine 19O-314 - Wellbore #1 - Plan #3 (3-09-17)	1,000.0	1,000.0	14.6	9.3	2.785	CC
Josephine 19O-314 - Wellbore #1 - Plan #3 (3-09-17)	12,825.3	12,939.8	270.4	-122.5	0.688	Level 1, ES, SF

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Reference Site:	Josephine 5N64W19N Pad Sec.19-T5N-R64W	MD Reference:	WELL @ 4649.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Josephine 190-214	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 #3 (3-09-17)	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						
Klein 190-HZ Pad Sec.19-T5N-R64W						
Klein 19N-302 - Wellbore #1 - Wellbore #1	2,170.7	2,213.0	306.2	291.8	21.318	CC
Klein 19N-302 - Wellbore #1 - Wellbore #1	2,200.0	2,240.5	306.4	291.8	20.910	ES
Klein 19N-302 - Wellbore #1 - Wellbore #1	7,900.0	6,703.3	694.1	630.9	10.977	SF
Klein 19N-432 - Wellbore #1 - Wellbore #1	7,546.0	6,872.9	340.0	285.3	6.225	CC, ES
Klein 19N-432 - Wellbore #1 - Wellbore #1	7,600.0	6,834.6	342.0	286.5	6.164	SF
Klein 19O-212 - Wellbore #1 - Wellbore #1	7,418.4	6,903.2	182.8	130.6	3.505	CC, ES, SF
Klein 19O-302 - Wellbore #1 - Wellbore #1	7,661.7	6,744.4	490.9	433.9	8.607	CC, ES
Klein 19O-302 - Wellbore #1 - Wellbore #1	7,800.0	6,676.0	503.7	444.0	8.430	SF

Offset Design Existing Wells Sec.19-T5N-R64W - Klein 1-19-5-64 (Noble-Exist) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 6990-UNKNOWN												Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
9,000.0	6,721.7	6,704.7	6,704.7	78.5	164.3	91.89	-167.5	-2,359.6	779.6	537.0	242.64	3.213	
9,100.0	6,721.4	6,704.4	6,704.4	81.8	164.3	91.64	-167.5	-2,359.6	680.3	434.4	245.92	2.766	
9,200.0	6,721.0	6,704.0	6,704.0	85.0	164.2	91.40	-167.5	-2,359.6	581.2	332.0	249.21	2.332	
9,300.0	6,720.6	6,703.6	6,703.6	88.3	164.2	91.16	-167.5	-2,359.6	482.5	230.0	252.50	1.911	
9,400.0	6,720.3	6,703.3	6,703.3	91.6	164.2	90.91	-167.5	-2,359.6	384.4	128.6	255.81	1.503	
9,500.0	6,719.9	6,702.9	6,702.9	94.9	164.2	90.67	-167.5	-2,359.6	287.7	28.6	259.12	1.110	Level 2
9,600.0	6,719.6	6,702.6	6,702.6	98.2	164.2	90.43	-167.5	-2,359.6	194.3	-68.1	262.44	0.740	Level 1
9,700.0	6,719.2	6,702.2	6,702.2	101.6	164.2	90.18	-167.5	-2,359.6	112.9	-152.9	265.76	0.425	Level 1
9,775.1	6,718.9	6,701.9	6,701.9	104.1	164.2	90.00	-167.5	-2,359.6	84.3	-184.0	268.25	0.314	Level 1, CC, ES, SF
9,800.0	6,718.8	6,701.8	6,701.8	104.9	164.2	89.94	-167.5	-2,359.6	87.9	-181.2	269.08	0.327	Level 1
9,900.0	6,718.5	6,701.5	6,701.5	108.2	164.2	89.70	-167.5	-2,359.6	150.7	-121.7	272.41	0.553	Level 1
10,000.0	6,718.1	6,701.1	6,701.1	111.6	164.2	89.45	-167.5	-2,359.6	240.2	-35.5	275.73	0.871	Level 1
10,100.0	6,717.8	6,700.8	6,700.8	114.9	164.2	89.21	-167.5	-2,359.6	335.7	56.6	279.06	1.203	Level 2
10,200.0	6,717.4	6,700.4	6,700.4	118.3	164.2	88.96	-167.5	-2,359.6	433.2	150.8	282.39	1.534	
10,300.0	6,717.1	6,700.1	6,700.1	121.7	164.2	88.72	-167.5	-2,359.6	531.7	245.9	285.72	1.861	
10,400.0	6,716.7	6,699.7	6,699.7	125.0	164.1	88.48	-167.5	-2,359.6	630.6	341.6	289.05	2.182	
10,500.0	6,716.3	6,699.3	6,699.3	128.4	164.1	88.23	-167.5	-2,359.6	729.8	437.5	292.37	2.496	