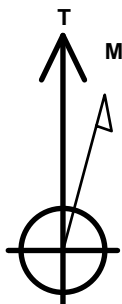


Well Name: Josephine 19N-214						
Surface Location: Josephine 5N64W19N Pad Sec.19-T5N-R64W						
North American Datum 1983 , US State Plane 1983, Colorado Northern Zone						
Ground Elevation: 4626.0						
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1385154.32	3253128.91	40.387090	-104.591290	
Original Well Elev WELL @ 4649.0ft (Original Well Elev)						

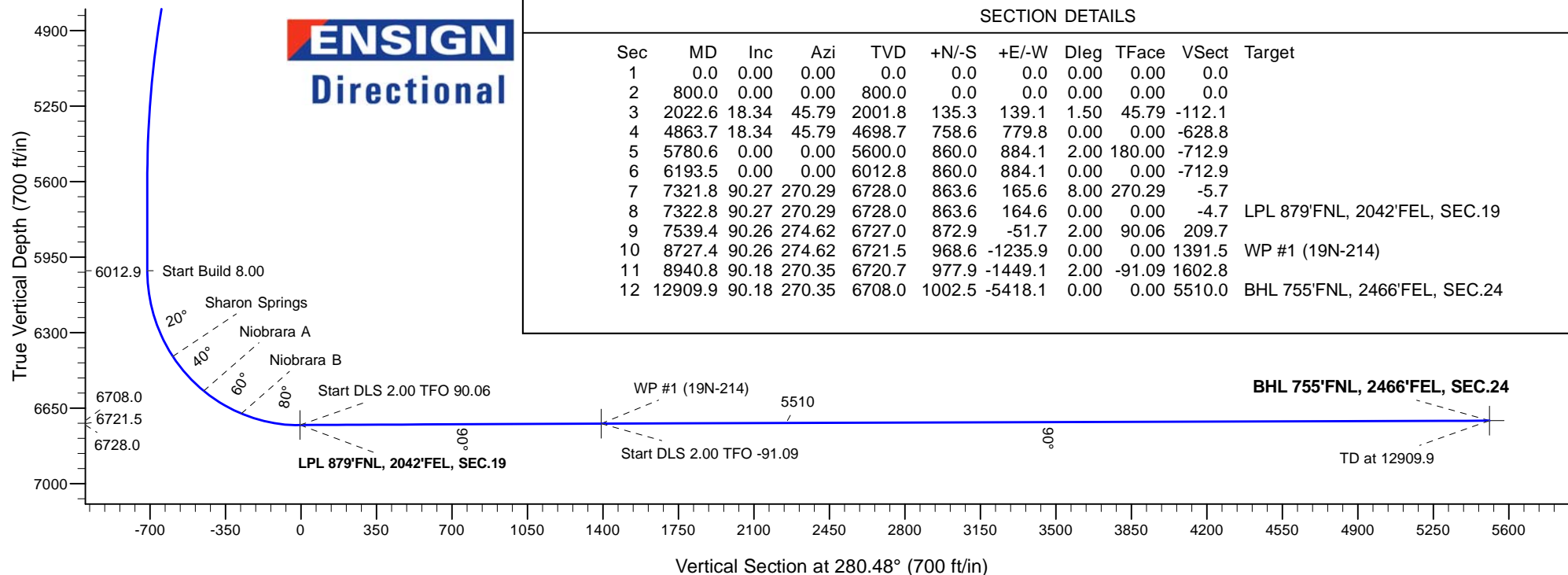
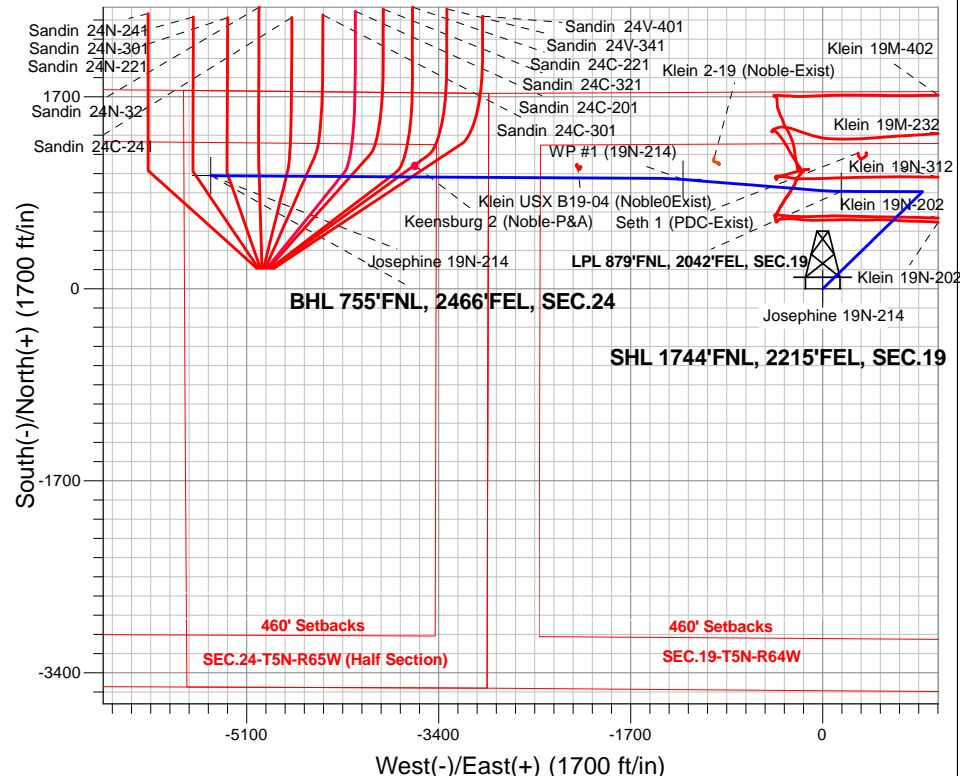
Name	TVD	+N/-S	+E/-W	Shape
SHL 1744'FNL, 2215'FEL, SEC.19	1.0	0.0	0.0	Point
BHL 755'FNL, 2466'FEL, SEC.24	6708.0	1002.5	-5418.1	Point
WP #1 (19N-214)	6721.5	968.6	-1235.9	Point
LPL 879'FNL, 2042'FEL, SEC.19	6728.0	863.6	164.6	Point



Magnetic Field
Strength: 52540.1nT
Dip Angle: 66.87°
Date: 3/9/2017
Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
800.0	800.0	KOP - Start Build 1.50
4698.6	4863.7	Start Drop -2.00
6012.9	6193.5	Start Build 8.00
6728.0	7322.8	Start DLS 2.00 TFO 90.06
6721.5	8727.4	Start DLS 2.00 TFO -91.09
6708.0	12909.9	TD at 12909.9





PDC Energy Inc. DJ Basin

SEC.19-T5N-R64W

Josephine 5N64W19N Pad Sec.19-T5N-R64W

Josephine 19N-214

Wellbore #1

Plan #3 (3-09-17)

Anticollision Report

09 March, 2017



Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Josephine 19N-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 19N-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 500.0 ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.45 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	3/9/2017		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	12,909.9	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						
Seth 1 (PDC-Exist) - Wellbore #1 - Wellbore #1	7,170.6	6,687.9	338.2	294.7	7.773	CC, ES
Seth 1 (PDC-Exist) - Wellbore #1 - Wellbore #1	7,200.0	6,693.4	339.4	295.6	7.754	SF
Existing Wells Sec.19-T5N-R64W (GRID)						
Klein 2-19 (Noble-Exist) - Wellbore #1 - Wellbore #1	8,469.4	6,700.9	207.9	133.8	2.807	CC, ES
Klein 2-19 (Noble-Exist) - Wellbore #1 - Wellbore #1	8,500.0	6,700.5	210.1	135.1	2.801	SF
Klein USX B19-04 (Noble0Exist) - Wellbore #1 - Wellbore	9,667.0	6,701.2	119.1	6.5	1.057	Level 2, CC, ES, SF
Existing Wells Sec.24-T5N-R65W						
Keensburg 2 (Noble-P&A) - Wellbore #1 - Wellbore #1	11,105.4	6,693.8	101.9	-207.9	0.329	Level 1, CC, ES, SF
Josephine 5N64W19N Pad Sec.19-T5N-R64W						
Josephine 19M-234 - Wellbore #1 - Plan #3 (3-09-17)	400.0	400.0	32.8	30.8	17.005	CC, ES
Josephine 19M-234 - Wellbore #1 - Plan #3 (3-09-17)	12,909.9	13,089.4	485.7	80.0	1.197	Level 2, SF
Josephine 19M-334 - Wellbore #1 - Plan #3 (3-09-17)	600.0	600.0	18.2	15.2	6.013	CC
Josephine 19M-334 - Wellbore #1 - Plan #3 (3-09-17)	12,909.9	13,048.6	280.8	-110.9	0.717	Level 1, ES, SF
Josephine 19M-404 - Wellbore #1 - Plan #3 (3-09-17)	200.0	200.0	47.4	46.5	57.331	CC, ES
Josephine 19M-404 - Wellbore #1 - Plan #3 (3-09-17)	4,400.0	4,327.4	498.6	455.3	11.513	SF
Josephine 19N-204 - Wellbore #1 - Plan #3 (3-09-17)	800.0	800.0	43.7	39.6	10.586	CC, ES
Josephine 19N-204 - Wellbore #1 - Plan #3 (3-09-17)	1,000.0	999.9	47.5	42.3	9.099	SF
Josephine 19N-314 - Wellbore #1 - Plan #3 (3-09-17)	800.0	800.0	14.6	10.5	3.530	CC
Josephine 19N-314 - Wellbore #1 - Plan #3 (3-09-17)	12,909.9	12,967.2	246.5	-142.5	0.634	Level 1, ES, SF
Josephine 19N-334 - Wellbore #1 - Plan #3 (3-09-17)	800.0	800.0	58.3	54.2	14.114	CC, ES
Josephine 19N-334 - Wellbore #1 - Plan #3 (3-09-17)	1,100.0	1,099.7	67.0	61.3	11.614	SF
Josephine 19N-404 - Wellbore #1 - Plan #3 (3-09-17)	800.0	800.0	29.1	25.0	7.058	CC, ES
Josephine 19N-404 - Wellbore #1 - Plan #3 (3-09-17)	8,727.4	8,849.9	498.0	369.8	3.884	SF
Josephine 19O-204 - Wellbore #1 - Plan #3 (3-09-17)	500.0	500.0	102.0	99.6	41.181	CC, ES
Josephine 19O-204 - Wellbore #1 - Plan #3 (3-09-17)	1,000.0	988.0	129.6	124.5	25.339	SF
Josephine 19O-214 - Wellbore #1 - Plan #3 (3-09-17)	800.0	800.0	72.9	68.7	17.644	CC, ES
Josephine 19O-214 - Wellbore #1 - Plan #3 (3-09-17)	1,200.0	1,199.3	88.7	82.4	14.027	SF
Josephine 19O-314 - Wellbore #1 - Plan #3 (3-09-17)	800.0	800.0	87.4	83.3	21.171	CC, ES
Josephine 19O-314 - Wellbore #1 - Plan #3 (3-09-17)	1,100.0	1,098.6	96.6	90.9	16.815	SF

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Josephine 19N-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 19N-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 19MN-HZ Pad Sec.19-T5N-R64W						
Klein 19M-232 - Wellbore #1 - Wellbore #1	6,900.0	7,413.3	483.1	425.3	8.363	SF
Klein 19M-232 - Wellbore #1 - Wellbore #1	7,321.8	7,050.8	466.0	413.8	8.922	CC, ES
Klein 19M-402 - Wellbore #1 - Wellbore #1						Out of range
Klein 19N-202 - Wellbore #1 - Wellbore #1	7,050.0	7,259.5	228.0	173.3	4.165	SF
Klein 19N-202 - Wellbore #1 - Wellbore #1	7,250.0	7,064.0	219.4	167.8	4.249	ES
Klein 19N-202 - Wellbore #1 - Wellbore #1	7,255.4	7,058.7	219.4	167.8	4.255	CC
Klein 19N-202 - Wellbore #2 - Sidetrack - Wellbore #2 - S	7,050.0	7,284.9	257.7	203.4	4.746	SF
Klein 19N-202 - Wellbore #2 - Sidetrack - Wellbore #2 - S	7,250.0	7,078.9	250.8	199.1	4.851	ES
Klein 19N-202 - Wellbore #2 - Sidetrack - Wellbore #2 - S	7,267.7	7,062.7	250.8	199.2	4.860	CC
Klein 19N-312 - Wellbore #1 - Wellbore #1	7,596.9	6,834.8	99.5	47.1	1.898	CC
Klein 19N-312 - Wellbore #1 - Wellbore #1	7,600.0	6,832.5	99.5	47.1	1.898	ES, SF
Sandin Farms 5N65W24N Pad Sec.24-T5N-R65W						
Sandin 24C-201 - Wellbore #1 - Plan #1 (12-20-16)	11,671.9	6,688.5	304.2	155.3	2.043	CC, ES, SF
Sandin 24C-221 - Wellbore #1 - Plan #1 (12-20-16)	11,184.5	6,750.0	307.7	167.7	2.197	CC
Sandin 24C-221 - Wellbore #1 - Plan #1 (12-20-16)	11,200.0	6,750.0	308.1	167.7	2.193	ES, SF
Sandin 24C-241 - Wellbore #1 - Plan #1 (12-21-16)	12,210.4	6,650.0	306.6	145.5	1.903	CC, ES, SF
Sandin 24C-301 - Wellbore #1 - Plan #1 (12-20-16)	11,955.8	6,664.4	373.8	203.4	2.193	CC, ES, SF
Sandin 24C-321 - Wellbore #1 - Plan #1 (12-20-16)	11,449.1	6,713.6	378.0	217.2	2.351	CC, ES, SF
Sandin 24N-221 - Wellbore #1 - Plan #1 (12-21-16)	12,766.0	6,650.0	297.4	121.3	1.688	CC, ES, SF
Sandin 24N-241 - Wellbore #1 - Plan #1 (12-21-16)						Out of range
Sandin 24N-301 - Wellbore #1 - Plan #1 (12-21-16)	12,909.9	6,700.0	297.7	109.1	1.579	CC, ES, SF
Sandin 24N-321 - Wellbore #1 - Plan #1 (12-21-16)	12,488.1	6,650.0	377.0	192.8	2.047	CC
Sandin 24N-321 - Wellbore #1 - Plan #1 (12-21-16)	12,500.0	6,650.0	377.2	192.7	2.044	ES, SF
Sandin 24V-341 - Wellbore #1 - Plan #1 (12-20-16)	10,913.4	6,800.0	375.3	223.4	2.471	CC, ES, SF
Sandin 24V-401 - Wellbore #1 - Plan #1 (12-20-16)	10,628.5	6,885.3	419.7	260.9	2.642	CC, ES, SF

Offset Design													Offset Site Error:	0.0 ft
Existing Wells Sec.19-T5N-R64W - Seth 1 (PDC-Exist) - Wellbore #1 - Wellbore #1													Offset Well Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS														
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	
6,750.0	6,515.0	6,484.1	6,482.2	31.4	16.1	51.17	1,196.3	314.6	494.9	452.4	42.55	11.632		
6,800.0	6,549.4	6,520.3	6,518.3	31.2	16.1	56.06	1,197.3	314.5	469.5	427.1	42.41	11.071		
6,850.0	6,581.2	6,553.7	6,551.7	31.0	16.1	61.39	1,198.2	314.6	443.9	401.5	42.41	10.467		
6,900.0	6,610.2	6,584.0	6,582.0	30.9	16.2	66.94	1,198.9	314.7	418.8	376.3	42.50	9.855		
6,950.0	6,636.3	6,610.5	6,608.5	30.7	16.2	72.37	1,199.5	314.9	395.3	352.6	42.62	9.274		
7,000.0	6,659.4	6,633.3	6,631.3	30.6	16.2	77.38	1,200.0	315.1	374.3	331.6	42.75	8.757		
7,050.0	6,679.3	6,653.1	6,651.1	30.5	16.2	81.82	1,200.4	315.1	357.1	314.3	42.88	8.329		
7,100.0	6,696.0	6,669.8	6,667.8	30.5	16.3	85.47	1,200.7	315.2	344.9	301.9	43.06	8.010		
7,150.0	6,709.3	6,683.3	6,681.3	30.4	16.3	88.16	1,200.9	315.2	338.8	295.4	43.34	7.816		
7,170.6	6,713.8	6,687.9	6,685.8	30.5	16.3	88.97	1,201.0	315.2	338.2	294.7	43.51	7.773	CC, ES	
7,200.0	6,719.2	6,693.4	6,691.4	30.5	16.3	89.79	1,201.1	315.2	339.4	295.6	43.77	7.754	SF	
7,250.0	6,725.7	6,700.1	6,698.1	30.6	16.3	90.29	1,201.2	315.2	347.1	302.7	44.37	7.822		
7,300.0	6,728.8	6,703.4	6,701.3	30.8	16.3	89.63	1,201.3	315.2	361.5	316.4	45.13	8.011		
7,321.8	6,728.0	6,702.6	6,700.6	30.9	16.3	88.96	1,201.3	315.2	369.3	323.8	45.49	8.119		
7,322.8	6,728.0	6,702.6	6,700.6	30.9	16.3	88.96	1,201.3	315.2	369.7	324.2	45.51	8.125		
7,400.0	6,727.6	6,702.3	6,700.3	31.5	16.3	88.94	1,201.3	315.2	406.1	359.5	46.67	8.702		
7,500.0	6,727.2	6,702.1	6,700.1	32.9	16.3	88.94	1,201.3	315.2	466.0	417.5	48.50	9.608		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation