

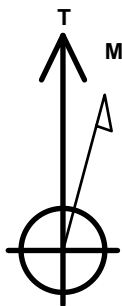
PDC Energy Inc. DJ Basin

Well Name: **Josephine 190-204**

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 1385052.35 3253132.74 40.386810 -104.591280
 Original Well Elev WELL @ 4649.0ft (Original Well Elev)

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 1849'FNL, 2215'FEL, SEC.19	1.0	0.0	0.0	Point
BHL 2608'FNL, 2452'FEL, SEC.24	6708.0	-750.0	-5410.1	Point
LPL 2675'FNL, 2054'FEL, SEC.19	6728.0	-828.0	164.1	Point



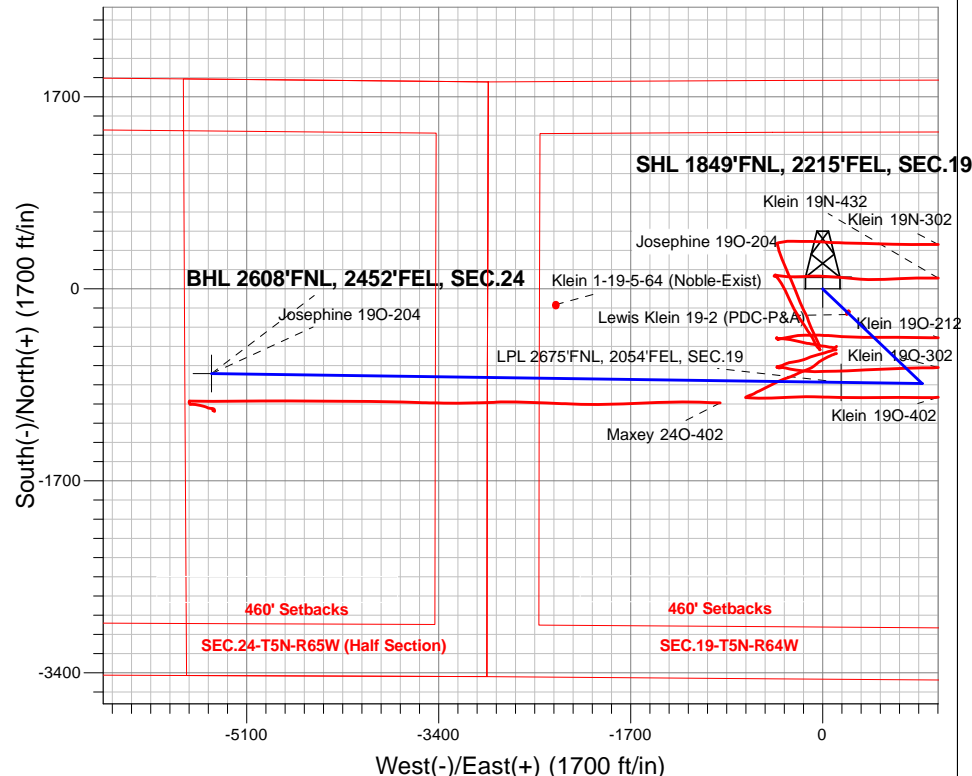
Azimuths to True North
 Magnetic North: 7.99°

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

Josephine 5N64W19N Pad Sec.19-T5N-R64W
 Josephine 190-204
 Plan #3 (3-09-17)
 11:40, March 10 2017

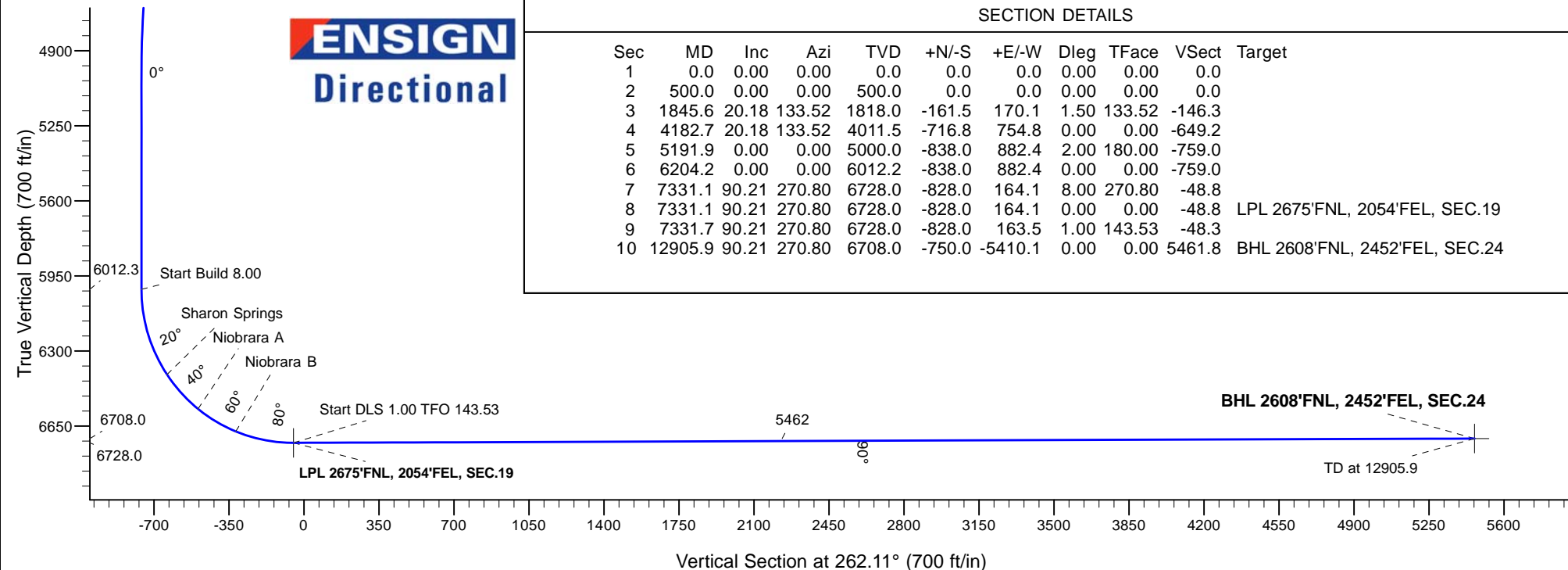
ANNOTATIONS

TVD	MD	Annotation
500.0	500.0	KOP - Start Build 1.50
4011.5	4182.7	Start Drop -2.00
6012.2	6204.2	Start Build 8.00
6728.0	7331.1	Start DLS 1.00 TFO 143.53
6728.0	7331.7	Start 5574.2 hold at 7331.7 MD
6708.0	12905.9	TD at 12905.9



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	500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.0	
3	1845.6	20.18	133.52	1818.0	-161.5	170.1	1.50	133.52	-146.3	
4	4182.7	20.18	133.52	4011.5	-716.8	754.8	0.00	0.00	-649.2	
5	5191.9	0.00	0.00	5000.0	-838.0	882.4	2.00	180.00	-759.0	
6	6204.2	0.00	0.00	6012.2	-838.0	882.4	0.00	0.00	-759.0	
7	7331.1	90.21	270.80	6728.0	-828.0	164.1	8.00	270.80	-48.8	
8	7331.1	90.21	270.80	6728.0	-828.0	164.1	0.00	0.00	-48.8	LPL 2675'FNL, 2054'FEL, SEC.19
9	7331.7	90.21	270.80	6728.0	-828.0	163.5	1.00	143.53	-48.3	
10	12905.9	90.21	270.80	6708.0	-750.0	-5410.1	0.00	0.00	5461.8	BHL 2608'FNL, 2452'FEL, SEC.24





PDC Energy Inc. DJ Basin

SEC.19-T5N-R64W

Josephine 5N64W19N Pad Sec.19-T5N-R64W

Josephine 19O-204

Wellbore #1

Plan #3 (3-09-17)

Anticollision Report

10 March, 2017



Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Josephine 19O-204
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 19O-204	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	12,905.9	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						
Klein 1-19-5-64 (Noble-Exist) - Wellbore #1 - Wellbore #1	9,867.0	6,701.9	654.3	385.2	2.432	CC
Klein 1-19-5-64 (Noble-Exist) - Wellbore #1 - Wellbore #1	9,900.0	6,701.8	655.1	384.9	2.425	ES, SF
Lewis Klein 19-2 (PDC-P&A) - Wellbore #1 - Wellbore #1	2,063.5	1,998.5	8.4	-5.2	0.618	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	134.8	132.9	69.948	CC, ES
Josephine 19M-234 - Wellbore #1 - Plan #3 (3-09-17)	1,000.0	975.9	195.8	190.6	37.615	SF
Josephine 19M-334 - Wellbore #1 - Plan #3 (3-09-17)	500.0	500.0	120.3	117.8	48.528	CC, ES
Josephine 19M-334 - Wellbore #1 - Plan #3 (3-09-17)	1,000.0	987.0	159.8	154.7	30.994	SF
Josephine 19M-404 - Wellbore #1 - Plan #3 (3-09-17)	200.0	200.0	149.4	148.6	180.861	CC, ES
Josephine 19M-404 - Wellbore #1 - Plan #3 (3-09-17)	1,100.0	1,051.5	269.3	263.4	45.364	SF
Josephine 19N-204 - Wellbore #1 - Plan #3 (3-09-17)	500.0	500.0	58.4	55.9	23.549	CC, ES
Josephine 19N-204 - Wellbore #1 - Plan #3 (3-09-17)	900.0	899.3	74.9	70.3	16.308	SF
Josephine 19N-214 - Wellbore #1 - Plan #3 (3-09-17)	500.0	500.0	102.0	99.6	41.181	CC, ES
Josephine 19N-214 - Wellbore #1 - Plan #3 (3-09-17)	1,000.0	994.9	130.1	124.9	25.310	SF
Josephine 19N-314 - Wellbore #1 - Plan #3 (3-09-17)	500.0	500.0	87.5	85.0	35.300	CC, ES
Josephine 19N-314 - Wellbore #1 - Plan #3 (3-09-17)	1,000.0	998.6	113.1	107.9	21.966	SF
Josephine 19N-334 - Wellbore #1 - Plan #3 (3-09-17)	500.0	500.0	43.8	41.3	17.678	CC, ES
Josephine 19N-334 - Wellbore #1 - Plan #3 (3-09-17)	800.0	799.7	53.0	49.0	13.101	SF
Josephine 19N-404 - Wellbore #1 - Plan #3 (3-09-17)	500.0	500.0	72.9	70.4	29.425	CC, ES
Josephine 19N-404 - Wellbore #1 - Plan #3 (3-09-17)	1,000.0	998.6	99.0	93.8	19.236	SF
Josephine 19O-214 - Wellbore #1 - Plan #3 (3-09-17)	500.0	500.0	29.3	26.8	11.813	CC, ES
Josephine 19O-214 - Wellbore #1 - Plan #3 (3-09-17)	12,905.9	12,821.2	535.7	120.5	1.290	Level 3, SF
Josephine 19O-314 - Wellbore #1 - Plan #3 (3-09-17)	500.0	500.0	14.8	12.4	5.987	CC
Josephine 19O-314 - Wellbore #1 - Plan #3 (3-09-17)	12,905.9	12,934.4	294.7	-103.2	0.741	Level 1, ES, SF

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Josephine 190-204
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 190-204	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	1,651.1	1,659.6	306.6	294.5	25.319	CC, ES
Klein 19N-302 - Wellbore #1 - Wellbore #1	1,900.0	1,882.0	328.4	313.8	22.469	SF
Klein 19N-432 - Wellbore #1 - Wellbore #1	1,749.0	1,743.6	363.5	351.0	29.020	CC, ES
Klein 19N-432 - Wellbore #1 - Wellbore #1	2,100.0	2,045.7	406.3	390.2	25.244	SF
Klein 19O-212 - Wellbore #1 - Wellbore #1	1,837.3	1,788.0	402.2	389.6	31.828	CC
Klein 19O-212 - Wellbore #1 - Wellbore #1	7,050.0	7,361.4	421.7	367.2	7.726	SF
Klein 19O-212 - Wellbore #1 - Wellbore #1	7,265.2	7,164.1	408.9	356.5	7.796	ES
Klein 19O-302 - Wellbore #1 - Wellbore #1	7,696.5	6,824.4	100.5	43.8	1.771	CC
Klein 19O-302 - Wellbore #1 - Wellbore #1	7,700.0	6,822.0	100.6	43.7	1.768	ES, SF
Klein 19O-402 - Wellbore #1 - Wellbore #1	7,903.3	6,893.3	144.4	79.5	2.224	CC, ES, SF
Maxey 240-HZ Pad Sec.24-T5N-R65W						
Maxey 240-402 - Wellbore #1 - Wellbore #1	12,798.4	6,815.0	243.7	21.5	1.097	Level 2, CC
Maxey 240-402 - Wellbore #1 - Wellbore #1	12,800.0	6,813.7	243.7	21.4	1.096	Level 2, ES, 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							Warning				
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor						
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)							
9,500.0	6,720.2	6,703.2	6,703.2	92.7	164.2	90.12	-138.3	-2,362.3	750.1	493.2	256.91	2.920						
9,600.0	6,719.9	6,702.9	6,702.9	96.0	164.2	90.08	-138.3	-2,362.3	706.6	446.4	260.20	2.716						
9,700.0	6,719.5	6,702.5	6,702.5	99.4	164.2	90.05	-138.3	-2,362.3	675.2	411.7	263.51	2.562						
9,800.0	6,719.1	6,702.1	6,702.1	102.7	164.2	90.02	-138.3	-2,362.3	657.7	390.8	266.82	2.465						
9,867.0	6,718.9	6,701.9	6,701.9	104.9	164.2	90.00	-138.3	-2,362.3	654.3	385.2	269.05	2.432	CC					
9,900.0	6,718.8	6,701.8	6,701.8	106.0	164.2	89.99	-138.3	-2,362.3	655.1	384.9	270.14	2.425	ES, SF					
10,000.0	6,718.4	6,701.4	6,701.4	109.4	164.2	89.96	-138.3	-2,362.3	667.6	394.2	273.47	2.441						
10,100.0	6,718.1	6,701.1	6,701.1	112.7	164.2	89.93	-138.3	-2,362.3	694.5	417.7	276.81	2.509						
10,200.0	6,717.7	6,700.7	6,700.7	116.1	164.2	89.90	-138.3	-2,362.3	734.1	454.0	280.15	2.621						
10,300.0	6,717.3	6,700.3	6,700.3	119.4	164.2	89.86	-138.3	-2,362.3	784.6	501.1	283.50	2.768						