

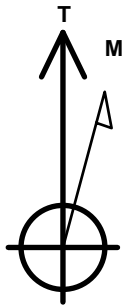
PETROLEUM DEVELOPMENT CORP DJ Basin

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 1385158.62 3253192.94 40.387100 -104.591060
 Original Well Elev WELL @ 4649.0ft (Original Well Elev)

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 1744'FNL, 2150'FEL, SEC.19	1.0	0.0	0.0	Point
BHL 755'FNL, 2466'FEL, SEC.24	6708.0	998.8	-5482.1	Point
LPL 755'FNL, 2297'FWL, SEC.19	6728.0	998.7	-721.5	Point



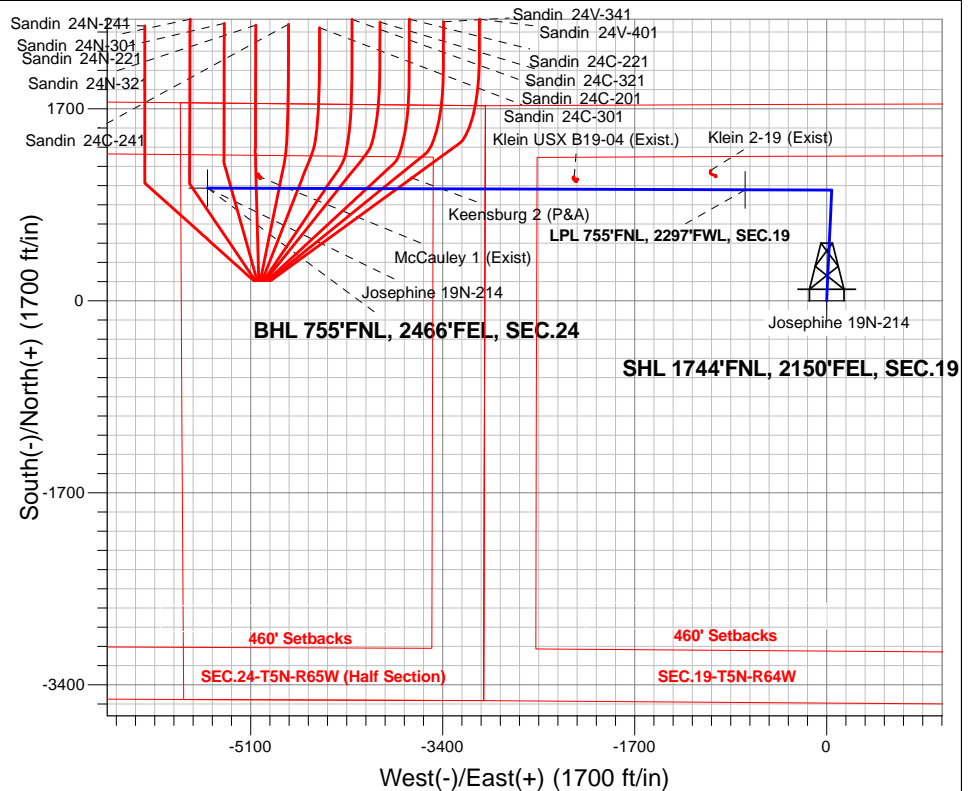
Azimuths to True North
 Magnetic North: 8.02°

Magnetic Field
 Strength: 52560.9snT
 Dip Angle: 66.87°
 Date: 12/27/2016
 Model: IGRF2010

Josephine 5N64W19N Pad Sec.19-T5N-R64W
 Josephine 19N-214
 Plan #1 (12-20-16)
 12:19, December 27 2016

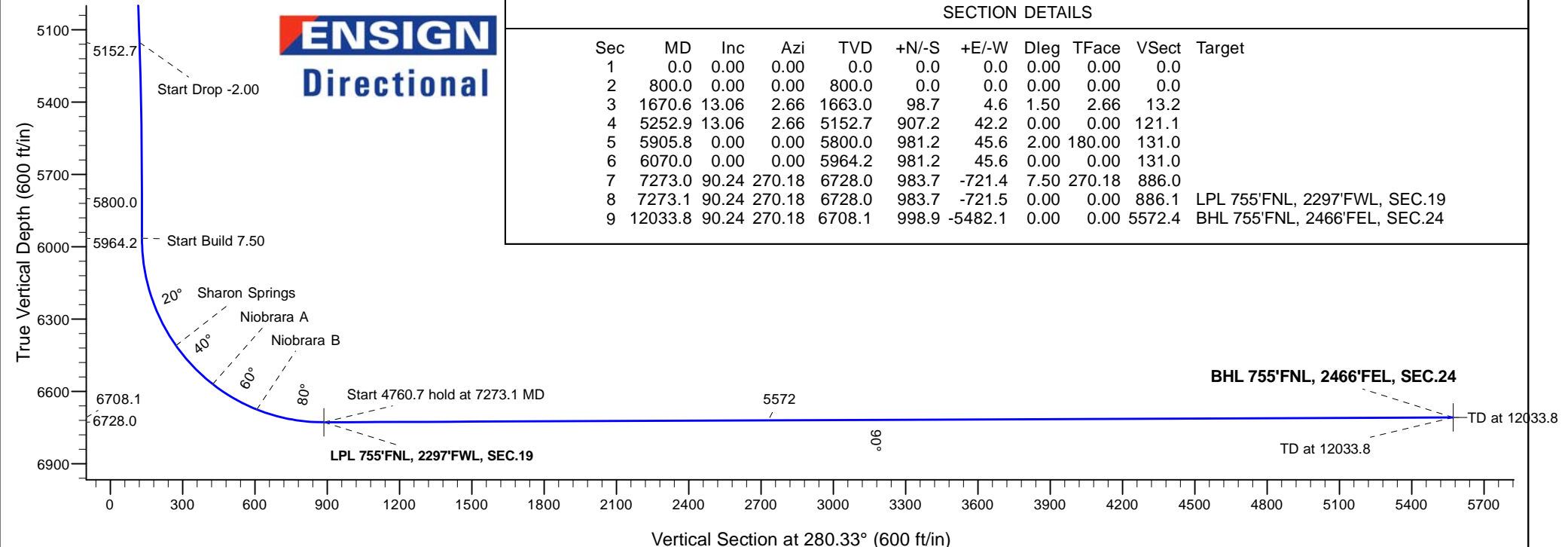
ANNOTATIONS

TVD	MD	Annotation
800.0	800.0	KOP - Start Build 1.50
5152.7	5252.9	Start Drop -2.00
5800.0	5905.8	Start 164.2 hold at 5905.8 MD
5964.2	6070.0	Start Build 7.50
6728.0	7273.1	Start 4760.7 hold at 7273.1 MD
6708.1	12033.8	TD at 12033.8



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	1670.6	13.06	2.66	1663.0	98.7	4.6	1.50	2.66	13.2	
4	5252.9	13.06	2.66	5152.7	907.2	42.2	0.00	0.00	121.1	
5	5905.8	0.00	0.00	5800.0	981.2	45.6	2.00	180.00	131.0	
6	6070.0	0.00	0.00	5964.2	981.2	45.6	0.00	0.00	131.0	
7	7273.0	90.24	270.18	6728.0	983.7	-721.4	7.50	270.18	886.0	
8	7273.1	90.24	270.18	6728.0	983.7	-721.5	0.00	0.00	886.1	LPL 755'FNL, 2297'FWL, SEC.19
9	12033.8	90.24	270.18	6708.1	998.9	-5482.1	0.00	0.00	5572.4	BHL 755'FNL, 2466'FEL, SEC.24





PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.19-T5N-R64W

Josephine 5N64W19N Pad Sec.19-T5N-R64W

Josephine 19N-214

Wellbore #1

Plan #1 (12-20-16)

Anticollision Report

27 December, 2016



Company:	PETROLEUM DEVELOPMENT CORP 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 #1 (12-20-16)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (12-20-16)		
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	12/27/2016		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	12,033.7	Plan #1 (12-20-16) (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.24-T5N-R65W						
Klein 2-19 (Exist) - Wellbore #1 - Wellbore #1	7,578.2	6,705.6	166.8	112.9	3.096	CC, ES
Klein 2-19 (Exist) - Wellbore #1 - Wellbore #1	7,600.0	6,705.3	168.2	113.7	3.086	SF
McCaughey 1 (Exist) - Wellbore #1 - Wellbore #1	11,590.5	6,697.1	111.6	-75.6	0.596	Level 1, CC, ES, SF
Josephine 5N64W19N Pad Sec.19-T5N-R64W						
Josephine 19M-234 - Wellbore #1 - Plan #1 (12-20-16)	366.3	367.3	29.1	27.4	16.705	CC
Josephine 19M-234 - Wellbore #1 - Plan #1 (12-20-16)	400.0	401.0	29.1	27.2	15.100	ES
Josephine 19M-234 - Wellbore #1 - Plan #1 (12-20-16)	12,033.8	12,135.8	477.1	102.0	1.272	Level 3, SF
Josephine 19M-334 - Wellbore #1 - Plan #1 (12-20-16)	600.0	600.0	14.6	11.5	4.813	CC
Josephine 19M-334 - Wellbore #1 - Plan #1 (12-20-16)	12,033.8	12,167.6	280.6	-74.0	0.791	Level 1, ES, SF
Josephine 19M-404 - Wellbore #1 - Plan #1 (12-20-16)	200.0	200.0	43.7	42.9	52.931	CC, ES
Josephine 19M-404 - Wellbore #1 - Plan #1 (12-20-16)	12,033.8	12,347.8	728.2	367.0	2.016	SF
Josephine 19N-204 - Wellbore #1 - Plan #1 (12-20-16)	800.0	800.0	47.4	43.3	11.486	CC, ES
Josephine 19N-204 - Wellbore #1 - Plan #1 (12-20-16)	12,033.8	11,945.7	761.6	386.7	2.032	SF
Josephine 19N-314 - Wellbore #1 - Plan #1 (12-20-16)	800.0	800.0	18.4	14.3	4.462	CC
Josephine 19N-314 - Wellbore #1 - Plan #1 (12-20-16)	12,033.8	12,078.6	246.9	-106.1	0.699	Level 1, ES, SF
Josephine 19N-334 - Wellbore #1 - Plan #1 (12-20-16)	800.0	800.0	62.0	57.9	15.010	CC, ES
Josephine 19N-334 - Wellbore #1 - Plan #1 (12-20-16)	1,100.0	1,099.7	73.7	67.9	12.739	SF
Josephine 19N-404 - Wellbore #1 - Plan #1 (12-20-16)	800.0	800.0	32.9	28.8	7.966	CC, ES
Josephine 19N-404 - Wellbore #1 - Plan #1 (12-20-16)	12,033.8	12,131.3	523.9	170.9	1.484	Level 3, SF
Josephine 19O-204 - Wellbore #1 - Plan #1 (12-20-16)	500.0	500.0	105.7	103.2	42.648	CC, ES
Josephine 19O-204 - Wellbore #1 - Plan #1 (12-20-16)	900.0	887.8	127.3	122.7	28.107	SF
Josephine 19O-214 - Wellbore #1 - Plan #1 (12-20-16)	800.0	800.0	76.6	72.4	18.536	CC, ES
Josephine 19O-214 - Wellbore #1 - Plan #1 (12-20-16)	1,100.0	1,099.7	88.3	82.5	15.257	SF
Josephine 19O-314 - Wellbore #1 - Plan #1 (12-20-16)	800.0	800.0	91.1	87.0	22.062	CC, ES
Josephine 19O-314 - Wellbore #1 - Plan #1 (12-20-16)	1,100.0	1,097.1	104.1	98.4	18.109	SF
Klein (Existing) Sec.19-T5N-R64W						
Keensburg 2 (P&A) - Wellbore #1 - Wellbore #1	10,229.0	6,695.6	96.4	-193.6	0.333	Level 1, CC, ES, SF
McCaughey B19-31D Pad Sec.24-T5N-R65W						
Klein USX B19-04 (Exist.) - Wellbore #1 - Wellbore #1	8,790.5	6,704.5	109.3	16.6	1.180	Level 2, CC, ES, SF