

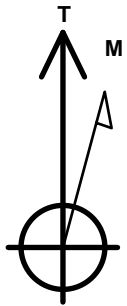
PDC Energy Inc. DJ Basin

Well Name: **Barr 11X-404**

Surface Location: Barr 5N65W11TY Pad Sec.11-T5N-R65W
 North American Datum 1983 , US State Plane 1983 Colorado Northern Zone
 Ground Elevation: 4611.0
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.0 0.0 1392431.50 3244226.32 40.407311 -104.622989
 Original Well Elev WELL @ 4634.0ft (Original Well Elev)

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 244'FSL, 529'FEL, SEC.11	1.0	0.0	0.0	Point
BHL 1106'FSL, 500'FWL, SEC.11	6948.0	849.3	-4239.2	Point
LPL 1106'FSL, 436'FEL, SEC.11	6948.0	861.6	94.0	Point



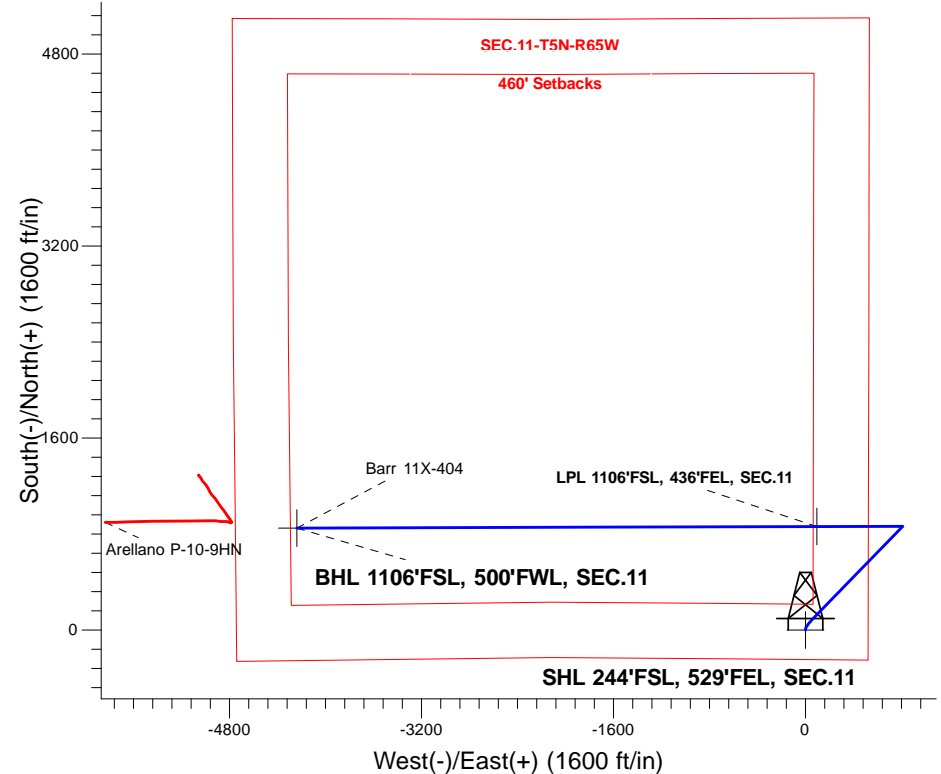
Azimuths to True North
 Magnetic North: 8.03°

Magnetic Field
 Strength: 52558.0snT
 Dip Angle: 66.88°
 Date: 2/1/2017
 Model: IGRF2010

Barr 5N65W11TY Pad Sec.11-T5N-R65W
 Barr 11X-404
 Plan #2 (6-19-17)
 15:14, June 19 2017

ANNOTATIONS

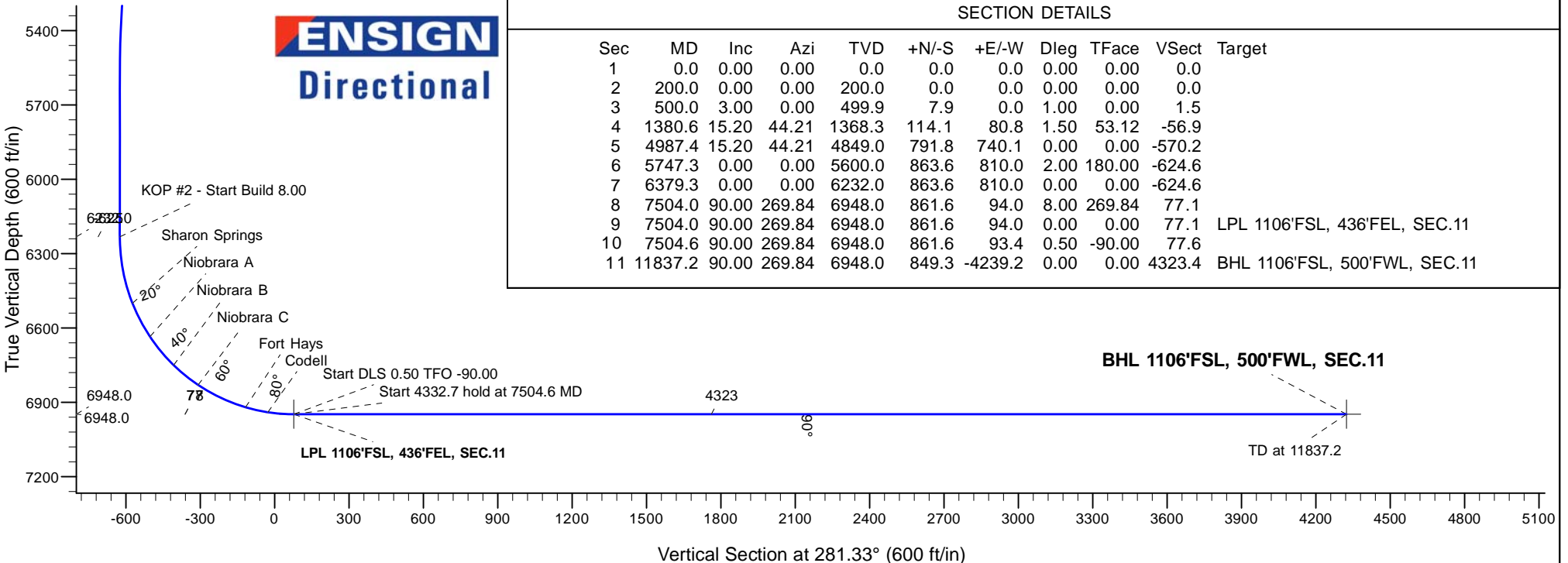
TVD	MD	Annotation
200.0	200.0	KOP - Start Build 1.00
499.9	500.0	Start DLS 1.50 TFO 53.12
4849.0	4987.4	Start Drop -2.00
6232.0	6379.3	KOP #2 - Start Build 8.00
6948.0	7504.0	Start DLS 0.50 TFO -90.00
6948.0	7504.6	Start 4332.7 hold at 7504.6 MD
6948.0	11837.2	TD at 11837.2



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	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	500.0	3.00	0.00	499.9	7.9	0.0	1.00	0.00	1.5	
4	1380.6	15.20	44.21	1368.3	114.1	80.8	1.50	53.12	-56.9	
5	4987.4	15.20	44.21	4849.0	791.8	740.1	0.00	0.00	-570.2	
6	5747.3	0.00	0.00	5600.0	863.6	810.0	2.00	180.00	-624.6	
7	6379.3	0.00	0.00	6232.0	863.6	810.0	0.00	0.00	-624.6	
8	7504.0	90.00	269.84	6948.0	861.6	94.0	8.00	269.84	77.1	
9	7504.0	90.00	269.84	6948.0	861.6	94.0	0.00	0.00	77.1	LPL 1106'FSL, 436'FEL, SEC.11
10	7504.6	90.00	269.84	6948.0	861.6	93.4	0.50	-90.00	77.6	
11	11837.2	90.00	269.84	6948.0	849.3	-4239.2	0.00	0.00	4323.4	BHL 1106'FSL, 500'FWL, SEC.11

ENSIGN
 Directional



PDC Energy Inc. DJ Basin

SEC.11-T5N-R65W

Barr 5N65W11TY Pad Sec.11-T5N-R65W

Barr 11X-404

Wellbore #1

Plan #2 (6-19-17)

Anticollision Summary Report

19 June, 2017

Company:	PDC Energy Inc. DJ Basin	Local Co-ordinate Reference:	Well Barr 11X-404
Project:	SEC.11-T5N-R65W	TVD Reference:	WELL @ 4634.0ft (Original Well Elev)
Reference Site:	Barr 5N65W11TY Pad Sec.11-T5N-R65W	MD Reference:	WELL @ 4634.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Barr 11X-404	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 (6-19-17)	Offset TVD Reference:	Offset Datum

Reference	Plan #2 (6-19-17)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.0 ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.45 Sigma	Casing Method:	Not applied

Survey Tool Program	Date 6/19/2017			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,837.2	Plan #2 (6-19-17) (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						
Arellano 10-L Pad Sec.10-T5N-R65W						
Arellano P-10-9HN - Wellbore #1 - Wellbore #1	11,837.2	6,588.0	801.5	739.8	12.985	CC, ES, SF
Barr 5N65W11TY Pad Sec.11-T5N-R65W						
Barr 11L-221 - Wellbore #1 - Plan #2 (6-19-17)	903.0	900.9	71.8	66.9	14.798	CC, ES
Barr 11L-221 - Wellbore #1 - Plan #2 (6-19-17)	6,800.0	8,007.3	251.4	204.9	5.397	SF
Barr 11L-301 - Wellbore #1 - Plan #2 (6-19-17)	807.0	805.7	59.4	55.1	13.973	CC, ES
Barr 11L-301 - Wellbore #1 - Plan #2 (6-19-17)	6,991.6	8,051.2	101.8	64.1	2.702	SF
Barr 11L-201 - Wellbore #1 - Plan #2 (6-19-17)	1,026.7	1,022.5	95.8	90.1	16.886	CC, ES
Barr 11L-201 - Wellbore #1 - Plan #2 (6-19-17)	6,500.0	8,275.5	783.0	724.2	13.306	SF
Barr 11L-221 - Wellbore #1 - Plan #2 (6-19-17)	200.0	200.0	149.8	149.0	181.396	CC
Barr 11L-221 - Wellbore #1 - Plan #2 (6-19-17)	400.0	400.0	149.9	148.0	77.770	ES
Barr 11L-221 - Wellbore #1 - Plan #2 (6-19-17)	3,700.0	3,482.9	976.4	940.2	26.989	SF
Barr 11L-301 - Wellbore #1 - Plan #2 (6-19-17)	721.8	717.2	134.0	130.3	36.184	CC, ES
Barr 11L-301 - Wellbore #1 - Plan #2 (6-19-17)	1,400.0	1,356.2	197.6	189.2	23.484	SF
Barr 11L-321 - Wellbore #1 - Plan #2 (6-19-17)	200.0	200.0	164.9	164.0	199.601	CC, ES
Barr 11L-321 - Wellbore #1 - Plan #2 (6-19-17)	3,500.0	3,270.3	974.6	940.3	28.395	SF
Barr 11L-341 - Wellbore #1 - Plan #3 (6-19-17)	981.7	978.6	83.7	78.4	15.599	CC
Barr 11L-341 - Wellbore #1 - Plan #3 (6-19-17)	1,000.0	996.7	83.8	78.3	15.268	ES
Barr 11L-341 - Wellbore #1 - Plan #3 (6-19-17)	6,600.0	8,143.4	564.3	510.0	10.393	SF
Barr 11L-401 - Wellbore #1 - Plan #2 (6-19-17)	930.4	924.4	112.7	107.7	22.597	CC, ES
Barr 11L-401 - Wellbore #1 - Plan #2 (6-19-17)	1,200.0	1,181.3	127.3	120.5	18.787	SF
Barr 11X-334 - Wellbore #1 - Plan #2 (6-19-17)	200.0	200.0	15.0	14.2	18.206	CC
Barr 11X-334 - Wellbore #1 - Plan #2 (6-19-17)	11,837.2	11,863.0	291.4	-15.1	0.951	Level 1, ES, SF
Barr 11Y-214 - Wellbore #1 - Plan #2 (6-19-17)	200.0	200.0	29.8	29.0	36.078	CC
Barr 11Y-214 - Wellbore #1 - Plan #2 (6-19-17)	400.0	400.0	30.0	28.1	15.586	ES
Barr 11Y-214 - Wellbore #1 - Plan #2 (6-19-17)	11,837.2	11,946.5	587.4	265.2	1.823	SF
Barr 11Y-314 - Wellbore #1 - Plan #2 (6-19-17)	200.0	200.0	44.8	44.0	54.283	CC
Barr 11Y-314 - Wellbore #1 - Plan #2 (6-19-17)	700.0	699.3	46.1	42.5	12.771	ES
Barr 11Y-314 - Wellbore #1 - Plan #2 (6-19-17)	11,837.2	11,830.1	807.1	477.2	2.447	SF