PETROLEUM DEVELOPMENT CORP DJ Basin

Well Name: **Elbert 4N**

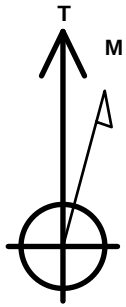
Surface Location: Elbert 1-12 Pad Sec.21-T5N-R65W
North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
Ground Elevation: 4638.0

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.0	0.0	1383559.65	3229751.77	40.383340	-104.675260	

Original Well Elev WELL @ 4661.0ft (Original Well Elev)

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 2164'FSL, 710'FWL, SEC.21	1.0	0.0	0.0	Point
BHL 2200'FNL, 0'FEL, SEC.22	6800.0	920.0	9850.6	Point
LPL 2150'FNL, 819'FWL, SEC.21	6870.0	950.9	108.6	Point



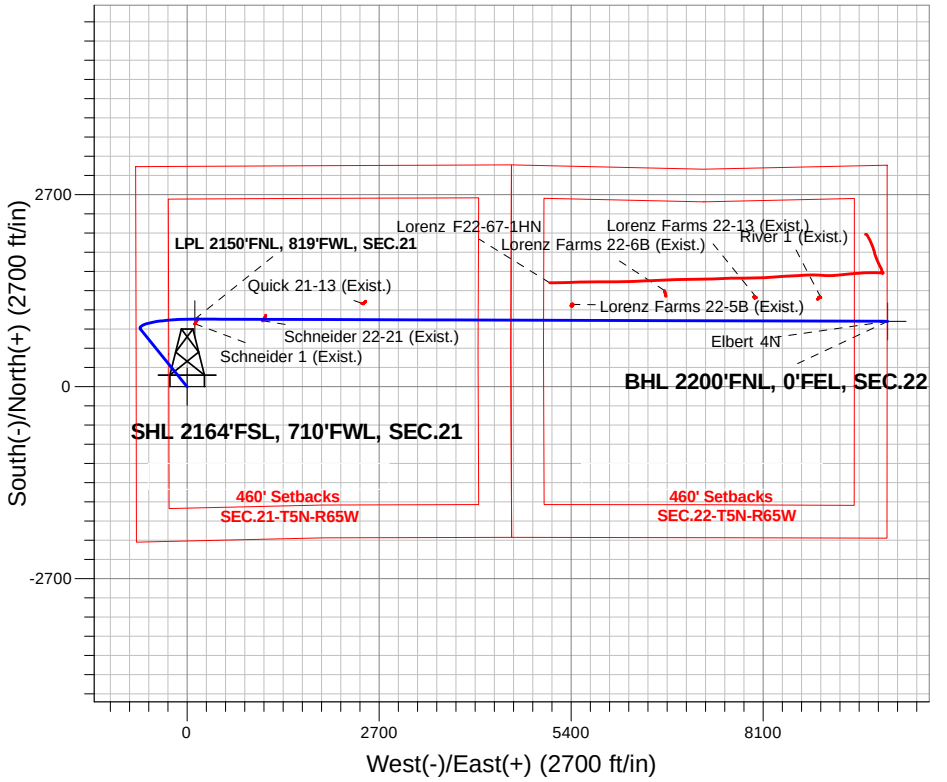
Azimuths to True North
Magnetic North: 8.07°

Magnetic Field
Strength: 52555.8snT
Dip Angle: 66.86°
Date: 12/8/2016
Model: IGRF2010

Elbert 1-12 Pad Sec.21-T5N-R65W
Elbert 4N
Plan #3 (1-12-17)
12:27, January 16 2017

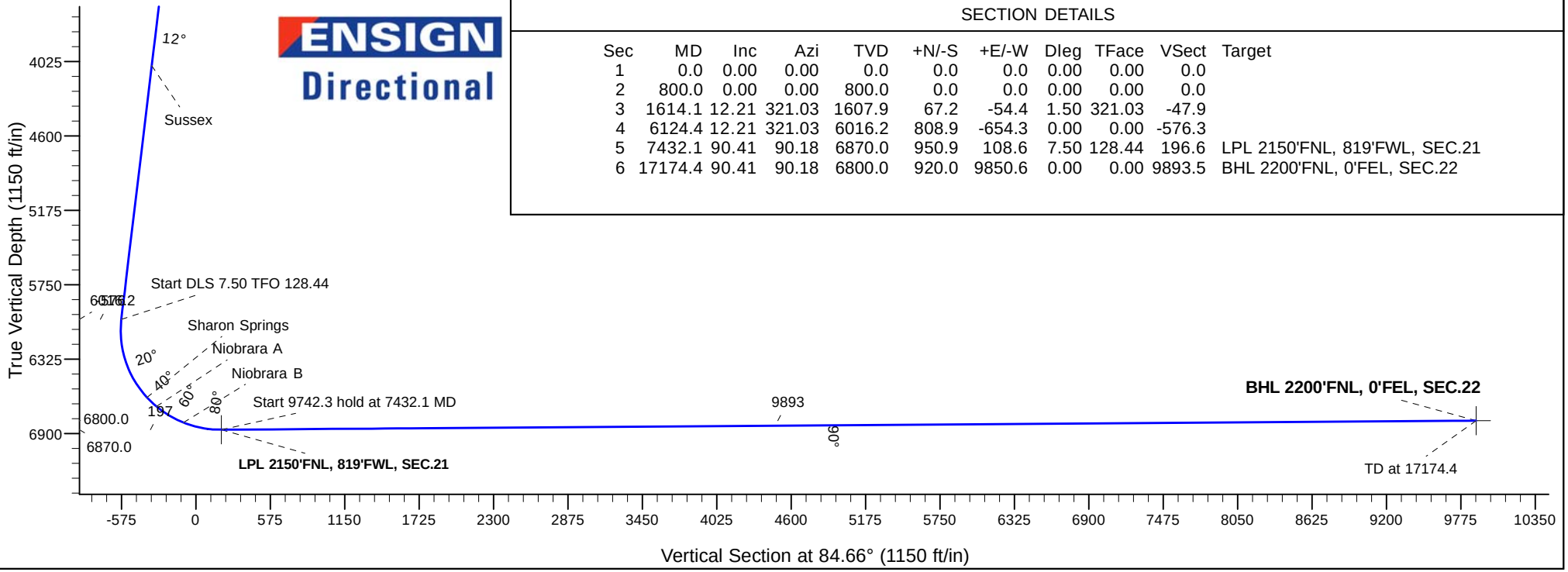
ANNOTATIONS

TVD	MD	Annotation
800.0	800.0	KOP - Start Build 1.50
1607.9	1614.1	Start 4510.3 hold at 1614.1 MD
6016.2	6124.4	Start DLS 7.50 TFO 128.44
6870.0	7432.1	Start 9742.3 hold at 7432.1 MD
6800.0	17174.4	TD at 17174.4



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	1614.1	12.21	321.03	1607.9	67.2	-54.4	1.50	321.03	-47.9	
4	6124.4	12.21	321.03	6016.2	808.9	-654.3	0.00	0.00	-576.3	
5	7432.1	90.41	90.18	6870.0	950.9	108.6	7.50	128.44	196.6	LPL 2150'FNL, 819'FWL, SEC.21
6	17174.4	90.41	90.18	6800.0	920.0	9850.6	0.00	0.00	9893.5	BHL 2200'FNL, 0'FEL, SEC.22



ENSIGN Directional

PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.21-T5N-R65W
Elbert 1-12 Pad Sec.21-T5N-R65W
Elbert 4N

Wellbore #1
Plan #3 (1-12-17)

Anticollision Report

16 January, 2017

PDC ENERGY
Growing E&P Value

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Elbert 4N
Project:	SEC.21-T5N-R65W	**TVD Reference:**	WELL @ 4661.0ft (Original Well Elev)
Reference Site:	Elbert 1-12 Pad Sec.21-T5N-R65W	**MD Reference:**	WELL @ 4661.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Elbert 4N	**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 (1-12-17)	**Offset TVD Reference:**	Offset Datum

Reference Plan #3 (1-12-17)

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 1,200.0 ft	**Error Surface:**	Elliptical Conic
Warning Levels Evaluated at:	2.45 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 1/16/2017

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	17,174.4	Plan #3 (1-12-17) (Wellbore #1)	MWD	MWD - Standard

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Elbert 1-12 Pad Sec.21-T5N-R65W						
Elbert 10N - Wellbore #1 - Plan #5 (1-12-17)	800.0	800.0	91.1	87.0	22.063	CC, ES
Elbert 10N - Wellbore #1 - Plan #5 (1-12-17)	1,200.0	1,199.3	108.5	102.2	17.141	SF
Elbert 11N - Wellbore #1 - Plan #4 (1-12-17)	400.0	400.0	105.7	103.8	54.835	CC, ES
Elbert 11N - Wellbore #1 - Plan #4 (1-12-17)	1,000.0	984.2	144.3	139.2	27.955	SF
Elbert 12N - Wellbore #1 - Plan #6 (1-13-17)	200.0	200.0	120.3	119.4	145.584	CC, ES
Elbert 12N - Wellbore #1 - Plan #6 (1-13-17)	1,100.0	1,070.6	212.8	206.9	36.191	SF
Elbert 1N - Wellbore #1 - Plan #3 (1-12-17)	200.0	200.0	43.7	42.9	52.921	CC, ES
Elbert 1N - Wellbore #1 - Plan #3 (1-12-17)	11,900.0	12,071.8	717.8	377.3	2.108	SF
Elbert 2N - Wellbore #1 - Plan #3 (1-12-17)	400.0	400.0	29.1	27.2	15.117	CC, ES
Elbert 2N - Wellbore #1 - Plan #3 (1-12-17)	11,900.0	11,965.0	485.0	142.5	1.416	Level 3, SF
Elbert 3N - Wellbore #1 - Plan #4 (1-12-17)	600.0	600.0	14.6	11.5	4.810	CC
Elbert 3N - Wellbore #1 - Plan #4 (1-12-17)	17,174.4	17,291.1	264.5	-415.1	0.389	Level 1, ES, SF
Elbert 5N - Wellbore #1 - Plan #3 (1-12-17)	800.0	800.0	14.6	10.4	3.528	CC
Elbert 5N - Wellbore #1 - Plan #3 (1-12-17)	17,174.4	17,224.7	264.4	-418.5	0.387	Level 1, ES, SF
Elbert 6N - Wellbore #1 - Plan #3 (1-12-17)	800.0	800.0	32.8	28.7	7.940	CC
Elbert 6N - Wellbore #1 - Plan #3 (1-12-17)	17,174.4	17,117.7	517.3	-187.3	0.734	Level 1, ES, SF
Elbert 7N - Wellbore #1 - Plan #4 (1-12-17)	800.0	800.0	47.5	43.3	11.489	CC, ES
Elbert 7N - Wellbore #1 - Plan #4 (1-12-17)	16,700.0	16,684.7	759.0	90.8	1.136	Level 2, SF
Elbert 8N - Wellbore #1 - Plan #4 (1-12-17)	800.0	800.0	62.0	57.9	15.014	CC, ES
Elbert 8N - Wellbore #1 - Plan #4 (1-12-17)	16,700.0	16,607.2	1,003.5	332.1	1.495	Level 3, SF
Elbert 9N - Wellbore #1 - Plan #4 (1-12-17)	800.0	800.0	76.6	72.4	18.538	CC, ES
Elbert 9N - Wellbore #1 - Plan #4 (1-12-17)	1,200.0	1,199.3	94.1	87.8	14.871	SF
Existing Wells Sec.25-T5N-R65W						
Schneider 1 (Exist.) - Wellbore #1 - Wellbore #1	7,431.1	6,848.1	66.6	20.4	1.440	Level 3, CC, ES, SF
Schneider 22-21 (Exist.) - Wellbore #1 - Wellbore #1	8,384.0	6,839.7	19.8	-51.8	0.277	Level 1, CC, ES, SF
Lorenz F22-67-1HN Pad Sec.22-T5N-R65W						
Lorenz F22-67-1HN - Wellbore #1 - Wellbore #1	12,421.6	11,183.0	526.5	182.2	1.529	CC, ES, SF
Lorenz Farms 22-13 (Exist.) - Wellbore #1 - Wellbore #1	15,329.6	6,793.1	329.9	25.8	1.085	Level 2, CC, ES, SF
Lorenz Farms 22-5B (Exist.) - Wellbore #1 - Wellbore #1	12,739.4	6,809.0	223.9	9.0	1.042	Level 2, CC, ES, SF
Lorenz Farms 22-6B (Exist.) - Wellbore #1 - Wellbore #1	14,034.5	6,796.2	420.2	156.6	1.594	CC, ES, SF
Quick 21-13 (Exist.) - Wellbore #1 - Wellbore #1	9,781.1	6,822.3	227.4	108.8	1.918	CC, ES
Quick 21-13 (Exist.) - Wellbore #1 - Wellbore #1	9,800.0	6,821.7	228.2	109.0	1.915	SF
River 1 (Exist.) - Wellbore #1 - Wellbore #1	16,227.5	6,784.0	335.1	-0.6	0.998	Level 1, CC, ES, SF