PETROLEUM DEVELOPMENT CORP DJ Basin

Well Name: **Stella 4N**

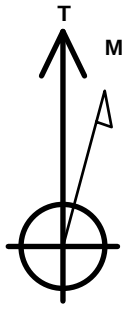
Surface Location: Stella 5N65W22Y Pad Sec.22-T5N-R65W
North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
Ground Elevation: 4647.0

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.0	0.0	1382363.27	3239196.47	40.379810	-104.641400	

RKB - 23' WELL @ 4670.0ft (RKB - 23')

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 839'FSL & 418'FEL, Sec.22	1.0	0.0	0.0	Point
BHL 155'FSL & 50'FWL, Sec.21	6860.0	-737.5	-10088.6	Point
LPL 102'FSL & 732'FEL, Sec.22	6870.0	-737.5	-317.0	Point



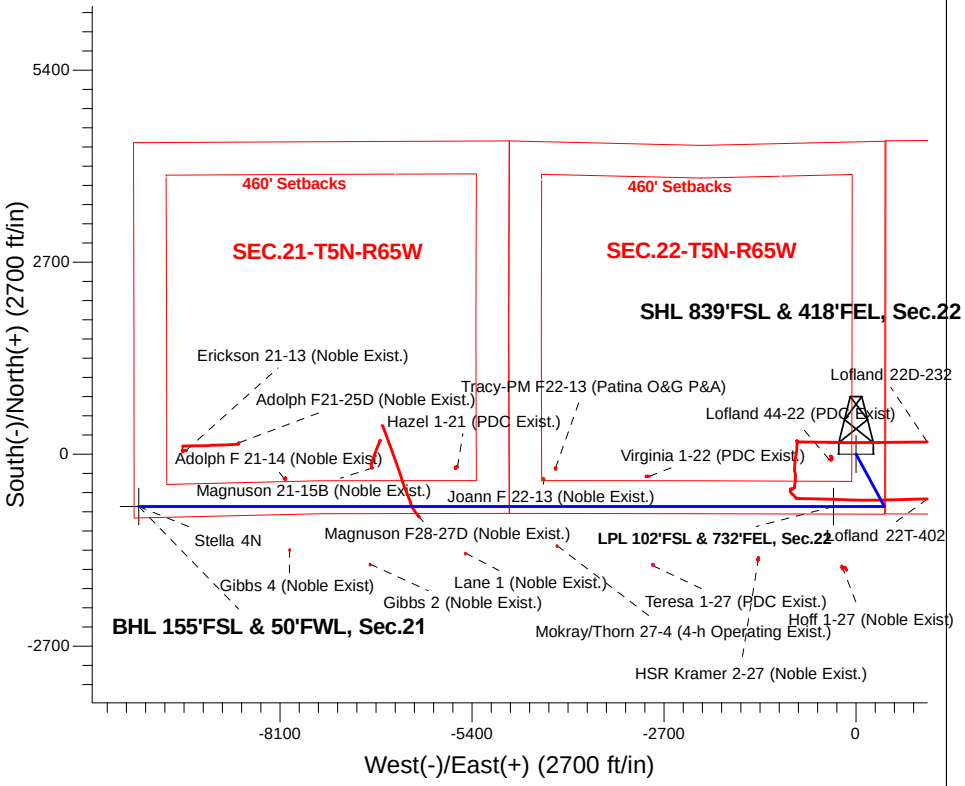
Azimuths to True North
Magnetic North: 8.04°

Magnetic Field
Strength: 52543.2snT
Dip Angle: 66.86°
Date: 1/26/2017
Model: IGRF2010

Stella 5N65W22Y Pad Sec.22-T5N-R65W
Stella 4N
Plan #1 (1-26-17)
16:20, January 27 2017

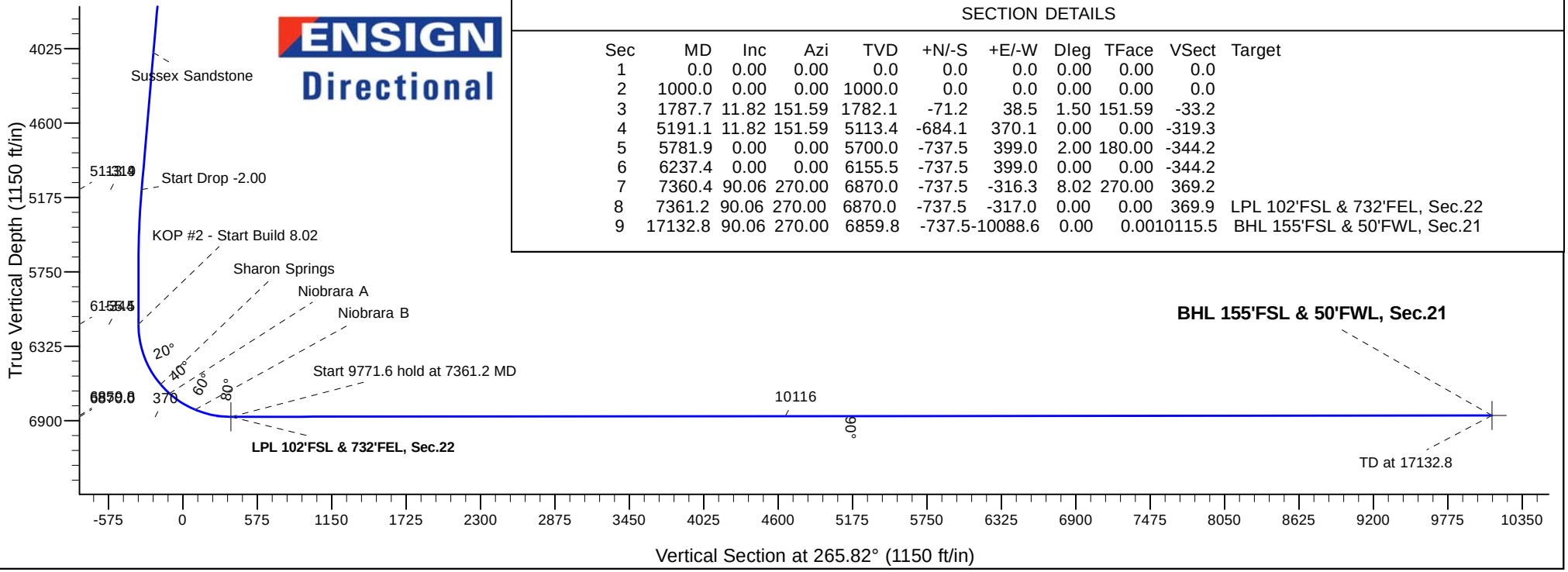
ANNOTATIONS

TVD	MD	Annotation
1000.0	1000.0	KOP - Start Build 1.50
5113.4	5191.1	Start Drop -2.00
6155.5	6237.4	KOP #2 - Start Build 8.02
6870.0	7361.2	Start 9771.6 hold at 7361.2 MD
6849.5	17132.8	TD at 17132.8



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DIeg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	
3	1787.7	11.82	151.59	1782.1	-71.2	38.5	1.50	151.59	-33.2	
4	5191.1	11.82	151.59	5113.4	-684.1	370.1	0.00	0.00	-319.3	
5	5781.9	0.00	0.00	5700.0	-737.5	399.0	2.00	180.00	-344.2	
6	6237.4	0.00	0.00	6155.5	-737.5	399.0	0.00	0.00	-344.2	
7	7360.4	90.06	270.00	6870.0	-737.5	-316.3	8.02	270.00	369.2	
8	7361.2	90.06	270.00	6870.0	-737.5	-317.0	0.00	0.00	369.9	LPL 102'FSL & 732'FEL, Sec.22
9	17132.8	90.06	270.00	6859.8	-737.5	-10088.6	0.00	0.00	10115.5	BHL 155'FSL & 50'FWL, Sec.21



ENSIGN Directional

PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.22-T5N-R65W
Stella 5N65W22Y Pad Sec.22-T5N-R65W
Stella 4N

Wellbore #1
Plan #1 (1-26-17)

Anticollision Report

27 January, 2017

PDC ENERGY
Growing E&P Value

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Stella 4N
Project:	SEC.22-T5N-R65W	**TVD Reference:**	WELL @ 4670.0ft (RKB - 23')
Reference Site:	Stella 5N65W22Y Pad Sec.22-T5N-R65W	**MD Reference:**	WELL @ 4670.0ft (RKB - 23')
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Stella 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 #1 (1-26-17)	**Offset TVD Reference:**	Offset Datum

Reference	Plan #1 (1-26-17)		
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** 1/27/2017

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	17,132.8	Plan #1 (1-26-17) (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
Adolph F21-25D Pad Sec.21-T5N-R65W						
Adolph F21-25D (Noble Exist.) - Wellbore #1 - Wellbore #	15,720.3	6,925.7	898.0	567.7	2.719	CC, ES
Adolph F21-25D (Noble Exist.) - Wellbore #1 - Wellbore #	15,800.0	6,925.2	901.6	568.5	2.707	SF
Erickson 21-13 (Noble Exist.) - Wellbore #1 - Wellbore #1	16,463.2	6,830.7	789.0	442.5	2.277	CC
Erickson 21-13 (Noble Exist.) - Wellbore #1 - Wellbore #1	16,500.0	6,830.9	789.8	442.1	2.271	ES, SF
Alles 22S-HZ Pad Sec.22-T5N-R65W						
Alles 22D-402 - Wellbore #1 - Wellbore #1	1,404.3	1,530.0	1,177.4	1,168.5	132.481	CC, ES
Alles 22D-402 - Wellbore #1 - Wellbore #1	1,700.0	1,778.2	1,196.8	1,186.3	114.246	SF
Elbert 1-12 Pad Sec.21-T5N-R65W						
Elbert 12N - Wellbore #1 - Plan #6 (1-13-17)	7,117.3	16,654.6	938.3	582.0	2.633	CC, ES, SF
Existing Wells (GRID) Sec.26-T5N-R65W						
Hoff 1-27 (Noble Exist) - Wellbore #1 - Wellbore #1	7,244.6	6,849.0	842.1	801.0	20.493	CC, ES
Hoff 1-27 (Noble Exist) - Wellbore #1 - Wellbore #1	7,800.0	6,855.3	1,009.2	954.2	18.367	SF
HSR Kramer 2-27 (Noble Exist.) - Wellbore #1 - Wellbore	8,417.3	6,836.3	715.3	643.1	9.911	CC, ES
HSR Kramer 2-27 (Noble Exist.) - Wellbore #1 - Wellbore	8,700.0	6,832.8	769.1	687.8	9.454	SF
Existing Wells Sec.22-T5N-R65W						
Gibbs 2 (Noble Exist.) - Wellbore #1 - Wellbore #1	13,878.8	6,839.2	809.9	400.2	1.977	CC
Gibbs 2 (Noble Exist.) - Wellbore #1 - Wellbore #1	13,900.0	6,839.2	810.2	399.8	1.974	ES, SF
Gibbs F 28-19D (Noble Exist.) - Wellbore #1 - Wellbore #	15,556.3	6,834.4	1,199.2	732.0	2.567	CC
Gibbs F 28-19D (Noble Exist.) - Wellbore #1 - Wellbore #	15,600.0	6,834.4	1,200.0	731.3	2.561	ES, SF
Lofland 44-22 (PDC Exist) - Wellbore #1 - Wellbore #1	100.0	75.1	353.0	352.8	1,358.672	CC
Lofland 44-22 (PDC Exist) - Wellbore #1 - Wellbore #1	1,000.0	974.7	355.0	349.5	64.661	ES
Lofland 44-22 (PDC Exist) - Wellbore #1 - Wellbore #1	7,700.0	6,848.7	717.8	667.6	14.288	SF
Reynolds 28-3 (Noble P&A) - Wellbore #1 - Wellbore #1	16,082.8	6,827.9	1,166.2	681.1	2.404	CC
Reynolds 28-3 (Noble P&A) - Wellbore #1 - Wellbore #1	16,100.0	6,827.8	1,166.3	680.7	2.401	ES
Reynolds 28-3 (Noble P&A) - Wellbore #1 - Wellbore #1	16,200.0	6,827.7	1,172.1	683.0	2.396	SF
Existing Wells Sec.25-T5N-R65W						
Magnuson 21-15B (Noble Exist.) - Wellbore #1 - Wellbor	13,843.1	6,878.0	539.7	282.1	2.095	CC, ES
Magnuson 21-15B (Noble Exist.) - Wellbore #1 - Wellbor	13,900.0	6,877.5	542.7	283.2	2.091	SF
Tracy-PM F22-13 (Patina O&G P&A) - Wellbore #1 - We	11,270.7	6,832.9	541.1	220.9	1.690	CC
Tracy-PM F22-13 (Patina O&G P&A) - Wellbore #1 - We	11,300.0	6,832.9	541.9	220.7	1.687	ES, SF

Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	**Local Co-ordinate Reference:**	Well Stella 4N
Project:	SEC.22-T5N-R65W	**TVD Reference:**	WELL @ 4670.0ft (RKB - 23')
Reference Site:	Stella 5N65W22Y Pad Sec.22-T5N-R65W	**MD Reference:**	WELL @ 4670.0ft (RKB - 23')
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Stella 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 #1 (1-26-17)	**Offset TVD Reference:**	Offset Datum

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
Existing Wells Sec.26-T5N-R65W						
Hazel 1-21 (PDC Exist.) - Wellbore #1 - Wellbore #1	12,650.6	6,832.1	558.8	343.6	2.596	CC, ES
Hazel 1-21 (PDC Exist.) - Wellbore #1 - Wellbore #1	12,700.0	6,832.0	561.0	344.1	2.586	SF
Lane 1 (Noble Exist.) - Wellbore #1 - Wellbore #1	12,535.8	6,849.6	653.6	289.7	1.796	CC, ES
Lane 1 (Noble Exist.) - Wellbore #1 - Wellbore #1	12,600.0	6,849.5	656.7	290.6	1.794	SF
Mokray/Thorn 27-4 (4-h Operating Exist.) - Wellbore #1 -	11,248.6	6,848.9	548.2	228.3	1.714	CC, ES
Mokray/Thorn 27-4 (4-h Operating Exist.) - Wellbore #1 -	11,300.0	6,848.9	550.6	229.0	1.712	SF
Teresa 1-27 (PDC Exist.) - Wellbore #1 - Wellbore #1	9,903.5	6,845.9	828.5	707.4	6.841	CC, ES
Teresa 1-27 (PDC Exist.) - Wellbore #1 - Wellbore #1	10,100.0	6,845.4	851.5	723.7	6.665	SF
Virginia 1-22 (PDC Exist.) - Wellbore #1 - Wellbore #1	9,953.2	6,834.6	425.6	302.6	3.462	CC, ES
Virginia 1-22 (PDC Exist.) - Wellbore #1 - Wellbore #1	10,000.0	6,833.7	428.1	303.6	3.438	SF
Geib 5N65W26V Pad Sec.26-T5N-R65W						
Geib 26U-304 - Wellbore #1 - Plan #1 (10-13-16)	7,389.0	12,698.6	285.7	62.9	1.282	Level 3, CC
Geib 26U-304 - Wellbore #1 - Plan #1 (10-13-16)	11,850.8	17,160.5	285.8	-233.1	0.551	Level 1, ES, SF
Lofland 22T-HZ Pad Sec.22-T5N-R65W						
Lofland 22D-232 - Wellbore #1 - Wellbore #1	6,600.0	7,675.4	962.0	902.7	16.240	SF
Lofland 22D-232 - Wellbore #1 - Wellbore #1	7,000.0	7,438.0	897.6	843.8	16.688	ES
Lofland 22D-232 - Wellbore #1 - Wellbore #1	7,024.4	7,420.6	897.5	843.9	16.741	CC
Lofland 22T-402 - Wellbore #1 - Wellbore #1	7,520.8	6,992.6	103.6	52.6	2.030	CC, ES, SF
Lorenz F22-67-1HN Pad Sec.22-T5N-R65W						
Adolph F 21-14 (Noble Exist) - Wellbore #1 - Wellbore #1	15,085.1	6,829.1	394.6	96.1	1.322	Level 3, CC
Adolph F 21-14 (Noble Exist) - Wellbore #1 - Wellbore #1	15,100.0	6,829.3	394.9	95.9	1.321	Level 3, ES, SF
Billy 22-4-19 (Noble Exist.) - Wellbore #1 - Wellbore #1	9,101.1	6,830.6	929.5	835.3	9.868	CC, ES
Billy 22-4-19 (Noble Exist.) - Wellbore #1 - Wellbore #1	9,400.0	6,826.8	976.4	872.2	9.374	SF
Billy 22-45 (Noble Exist.) - Wellbore #1 - Wellbore #1						Out of range
Gibbs 4 (Noble Exist) - Wellbore #1 - Wellbore #1	15,010.0	6,833.0	605.5	157.2	1.351	Level 3, CC, ES, SF
Joann F 22-13 (Noble Exist.) - Wellbore #1 - Wellbore #1	11,437.3	6,838.5	378.0	204.9	2.183	CC, ES, SF
Lofland 22-43 (Noble Exist.) - Wellbore #1 - Wellbore #1	8,838.1	6,828.8	572.8	486.8	6.662	CC, ES
Lofland 22-43 (Noble Exist.) - Wellbore #1 - Wellbore #1	9,000.0	6,827.0	595.2	503.9	6.518	SF
Magnuson Pad Sec.21-T5N-R65W						
Magnuson F28-27D (Noble Exist.) - Magnuson F28-27D	13,187.1	7,035.3	148.5	-92.8	0.615	Level 1, CC, ES, SF
Stella 5N65W22Y Pad Sec.22-T5N-R65W						
Stella 1N - Wellbore #1 - Plan #1 (1-24-17)	1,000.0	1,000.0	44.9	39.7	8.580	CC, ES
Stella 1N - Wellbore #1 - Plan #1 (1-24-17)	17,132.8	17,147.8	752.5	46.5	1.066	Level 2, SF
Stella 2N - Wellbore #1 - Plan #1 (1-24-17)	1,000.0	1,000.0	31.2	26.0	5.967	CC
Stella 2N - Wellbore #1 - Plan #1 (1-24-17)	17,132.8	17,083.0	466.6	-240.7	0.660	Level 1, ES, SF
Stella 3N - Wellbore #1 - Plan #1 (1-26-17)	1,000.0	1,000.0	15.6	10.4	2.984	CC
Stella 3N - Wellbore #1 - Plan #1 (1-26-17)	17,132.8	17,118.6	232.5	-455.8	0.338	Level 1, ES, SF

Offset Design Adolph F21-25D Pad Sec.21-T5N-R65W - Adolph F21-25D (Noble Exist.) - Wellbore #1 - Wellbore #1

Survey Program: 78-

Offset Site Error: 0.0 ft
Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
15,000.0	6,862.0	6,930.6	6,842.3	280.7	25.0	90.07	160.5	-8,676.1	1,151.2	845.6	305.59	3.767	
15,100.0	6,861.9	6,929.9	6,841.7	284.1	25.0	90.03	160.5	-8,676.1	1,091.4	782.4	309.02	3.532	
15,200.0	6,861.8	6,929.2	6,841.0	287.6	25.0	89.98	160.5	-8,676.1	1,037.9	725.4	312.45	3.322	

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