PDC Energy Inc. DJ Basin

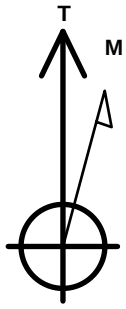
Well Name: **J Clark 11N (Nio C)**
Surface Location: Clark 5N65W14 1-21 Pad Sec.14-T5N-R65W
North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
Ground Elevation: 4615.0

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.0	0.0	1391636.26	3242740.94	40.405168	-104.628351	

Original Well Elev WELL @ 4638.0ft (Original Well Elev)

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 550'FNL & 2024'FEL, Sec.14	1.0	0.0	0.0	Point
BHL 500'FNL & 2400'FEL, Sec.11	6843.0	5373.8	-370.1	Point
LPL 50'FSL & 2487'FEL, Sec.11	6863.0	603.7	-465.8	Point



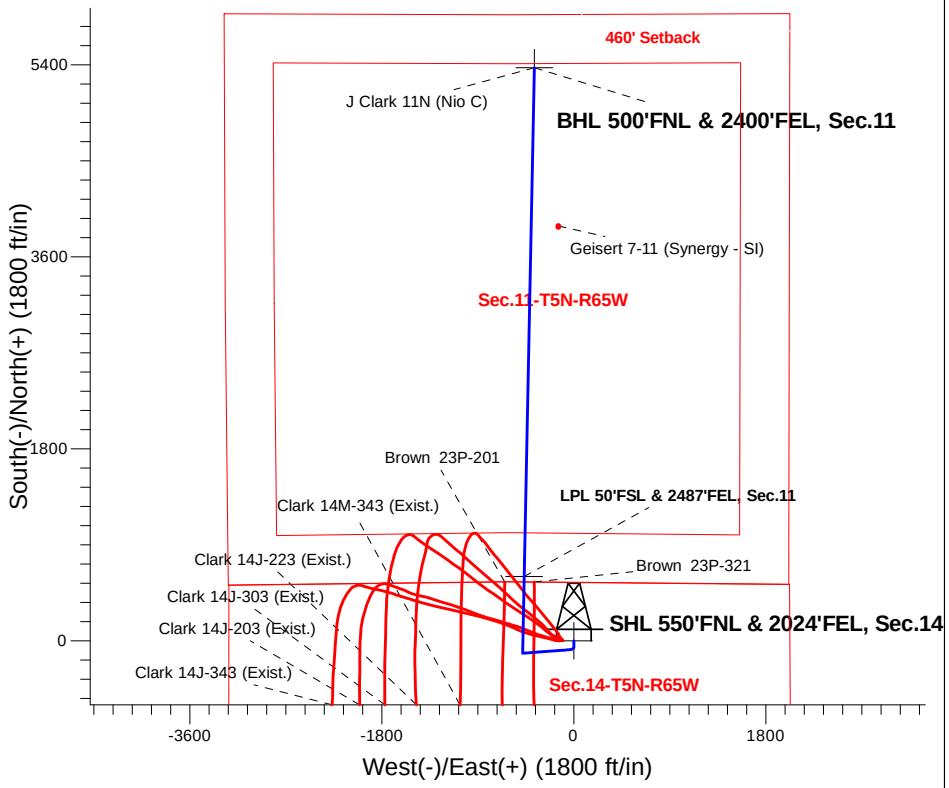
Azimuths to True North
Magnetic North: 7.91°

Magnetic Field
Strength: 52463.7snT
Dip Angle: 66.85°
Date: 12/19/2017
Model: IGRF2010

Clark 5N65W14 1-21 Pad Sec.14-T5N-R65W
J Clark 11N (Nio C)
Plan #1 (12-18-17)
13:04, January 12 2018

ANNOTATIONS

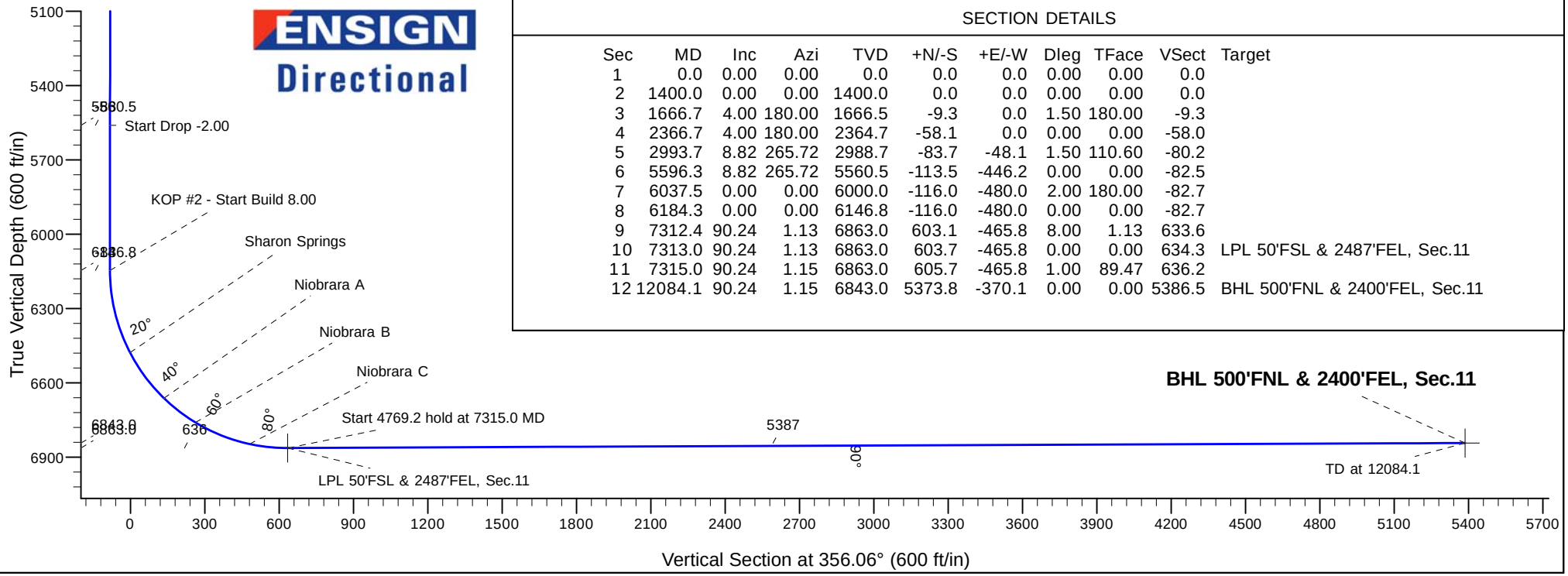
TVD	MD	Annotation
1400.0	1400.0	KOP - Start Build 1.50
1666.5	1666.7	Start 700.0 hold at 1666.7 MD
2364.7	2366.7	Start DLS 1.50 TFO 110.60
5560.5	5596.3	Start Drop -2.00
6146.8	6184.3	KOP #2 - Start Build 8.00
6863.0	7315.0	Start 4769.2 hold at 7315.0 MD
6843.0	12084.1	TD at 12084.1



ENSIGN Directional

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	1400.0	0.00	0.00	1400.0	0.0	0.0	0.00	0.00	0.0	
3	1666.7	4.00	180.00	1666.5	-9.3	0.0	1.50	180.00	-9.3	
4	2366.7	4.00	180.00	2364.7	-58.1	0.0	0.00	0.00	-58.0	
5	2993.7	8.82	265.72	2988.7	-83.7	-48.1	1.50	110.60	-80.2	
6	5596.3	8.82	265.72	5560.5	-113.5	-446.2	0.00	0.00	-82.5	
7	6037.5	0.00	0.00	6000.0	-116.0	-480.0	2.00	180.00	-82.7	
8	6184.3	0.00	0.00	6146.8	-116.0	-480.0	0.00	0.00	-82.7	
9	7312.4	90.24	1.13	6863.0	603.1	-465.8	8.00	1.13	633.6	
10	7313.0	90.24	1.13	6863.0	603.7	-465.8	0.00	0.00	634.3	LPL 50'FSL & 2487'FEL, Sec.11
11	7315.0	90.24	1.15	6863.0	605.7	-465.8	1.00	89.47	636.2	
12	12084.1	90.24	1.15	6843.0	5373.8	-370.1	0.00	0.00	5386.5	BHL 500'FNL & 2400'FEL, Sec.11



ENSIGN Directional

PDC Energy Inc. DJ Basin

SEC.14-T5N-R65W
Clark 5N65W14 1-21 Pad Sec.14-T5N-R65W
J Clark 11N (Nio C)

Wellbore #1
Plan #1 (12-18-17)

Anticollision Summary Report

12 January, 2018

PDC ENERGY
Growing E&P Value

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well J Clark 11N (Nio C)
Project:	SEC.14-T5N-R65W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Clark 5N65W14 1-21 Pad Sec.14-T5N-R65W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	J Clark 11N (Nio C)	**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 (12-18-17)	**Offset TVD Reference:**	Offset Datum

Reference	Plan #1 (12-18-17)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 50.0ft	**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** 1/12/2018

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	12,084.1	Plan #1 (12-18-17) (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
Brown 5N65W23 Pad Sec.23-T5N-R65W						
Brown 23P-201 - Wellbore #1 - Wellbore #1	6,962.6	15,045.2	181.4	-43.6	0.806	Level 1, CC, ES, SF
Brown 23P-321 - Wellbore #1 - Wellbore #1	7,067.7	15,647.3	100.2	-125.8	0.443	Level 1, CC, ES, SF
Clark 5N65W14 1-21 Pad Sec.14-T5N-R65W						
J Clark 10N (Nio B) - Wellbore #1 - Plan #1 (12-18-17)	1,233.4	1,233.4	15.0	8.5	2.308	CC
J Clark 10N (Nio B) - Wellbore #1 - Plan #1 (12-18-17)	12,084.1	12,018.2	163.5	-75.1	0.685	Level 1, ES, SF
J Clark 12N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	1,433.4	1,433.4	15.0	7.4	1.974	CC
J Clark 12N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	1,550.0	1,550.0	15.3	7.1	1.864	ES
J Clark 12N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	12,084.1	11,983.6	258.3	11.1	1.045	Level 2, SF
J Clark 13N (Nio C) - Wellbore #1 - Plan #1 (1-10-18)	1,446.9	1,446.9	30.0	22.3	3.908	CC
J Clark 13N (Nio C) - Wellbore #1 - Plan #1 (1-10-18)	1,550.0	1,550.0	30.1	21.9	3.676	ES
J Clark 13N (Nio C) - Wellbore #1 - Plan #1 (1-10-18)	12,084.1	12,055.3	500.0	244.9	1.960	SF
J Clark 14N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	1,200.0	1,200.0	45.0	38.7	7.107	CC, ES
J Clark 14N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	12,084.1	11,997.7	752.9	498.7	2.962	SF
J Clark 15N (Nio C) - Wellbore #1 - Plan #1 (1-10-18)	800.0	800.0	60.0	55.9	14.526	CC, ES
J Clark 15N (Nio C) - Wellbore #1 - Plan #1 (1-10-18)	1,050.0	1,045.9	67.8	62.4	12.490	SF
J Clark 16N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	200.0	200.0	75.0	74.2	90.802	CC, ES
J Clark 16N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	850.0	831.8	128.5	124.2	29.317	SF
J Clark 1C (Codell) - Wellbore #1 - Plan #1 (1-10-18)	182.6	184.6	225.1	224.4	305.907	CC
J Clark 1C (Codell) - Wellbore #1 - Plan #1 (1-10-18)	200.0	200.0	225.1	224.3	272.552	ES
J Clark 1C (Codell) - Wellbore #1 - Plan #1 (1-10-18)	1,450.0	1,346.7	414.3	406.6	53.976	SF
J Clark 2N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	382.6	384.6	210.1	208.3	114.360	CC
J Clark 2N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	400.0	400.0	210.1	208.2	109.019	ES
J Clark 2N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	1,400.0	1,331.0	332.6	325.3	45.519	SF
J Clark 3N (Nio C) - Wellbore #1 - Plan #1 (1-10-18)	318.5	320.5	195.1	193.6	134.643	CC
J Clark 3N (Nio C) - Wellbore #1 - Plan #1 (1-10-18)	500.0	500.0	195.3	192.9	80.686	ES
J Clark 3N (Nio C) - Wellbore #1 - Plan #1 (1-10-18)	1,400.0	1,343.5	299.1	291.8	40.692	SF
J Clark 4N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	313.8	315.8	180.1	178.7	126.432	CC
J Clark 4N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	550.0	551.5	180.6	177.9	66.446	ES
J Clark 4N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	1,400.0	1,360.2	255.1	247.7	34.500	SF
J Clark 5N (Nio C) - Wellbore #1 - Plan #1 (1-10-18)	281.7	281.7	90.0	88.8	71.907	CC
J Clark 5N (Nio C) - Wellbore #1 - Plan #1 (1-10-18)	450.0	449.7	90.3	88.2	42.099	ES
J Clark 5N (Nio C) - Wellbore #1 - Plan #1 (1-10-18)	1,050.0	1,035.6	127.8	122.3	23.359	SF
J Clark 6N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	474.6	474.6	75.0	72.7	32.420	CC
J Clark 6N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	650.0	649.7	75.4	72.2	23.454	ES
J Clark 6N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	1,150.0	1,143.0	94.4	88.5	15.856	SF
J Clark 7N (Nio C) - Wellbore #1 - Plan #1 (1-10-18)	664.6	664.6	60.0	56.6	17.844	CC

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well J Clark 11N (Nio C)
Project:	SEC.14-T5N-R65W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Clark 5N65W14 1-21 Pad Sec.14-T5N-R65W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	J Clark 11N (Nio C)	**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 (12-18-17)	**Offset TVD Reference:**	Offset Datum

Summary

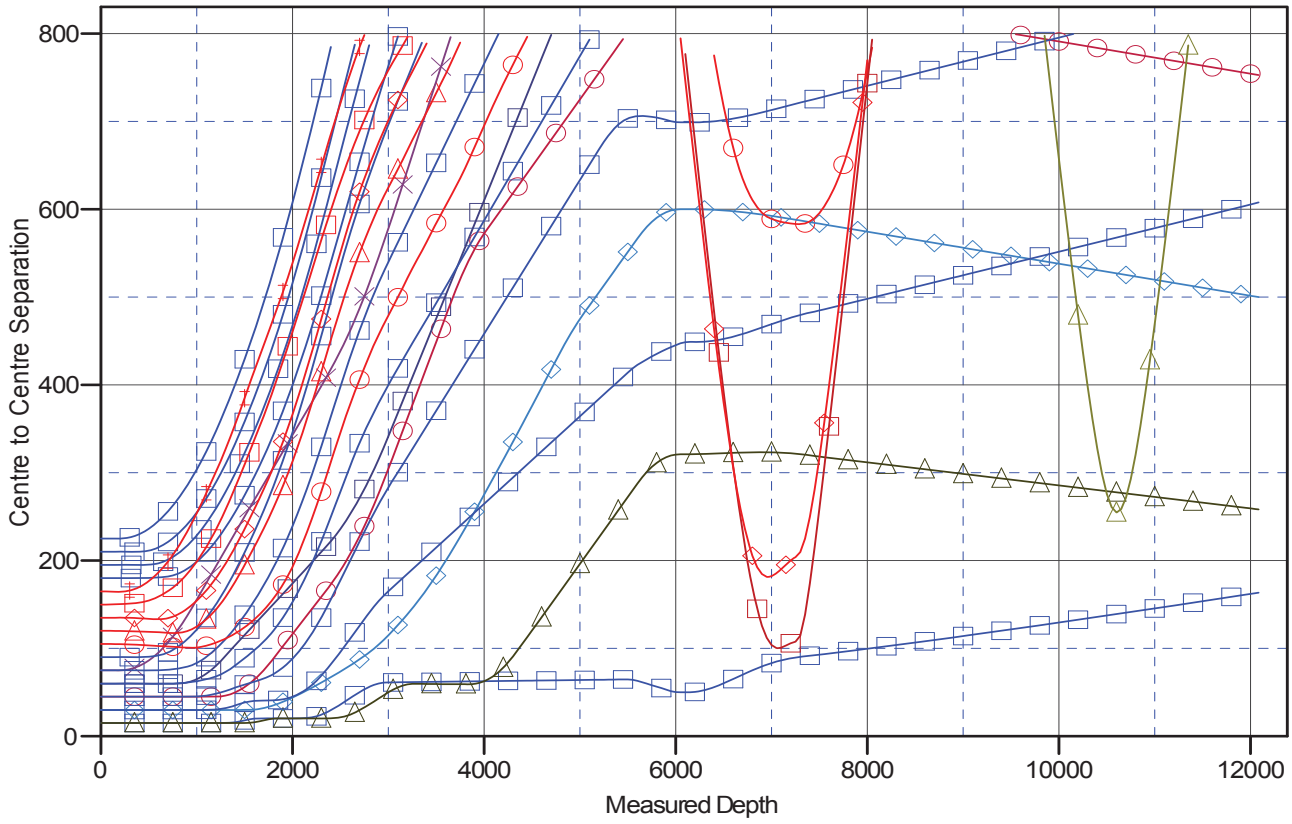
Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Clark 5N65W14 1-21 Pad Sec.14-T5N-R65W						
J Clark 7N (Nio C) - Wellbore #1 - Plan #1 (1-10-18)	800.0	799.8	60.2	56.1	14.887	ES
J Clark 7N (Nio C) - Wellbore #1 - Plan #1 (1-10-18)	1,300.0	1,296.7	73.2	66.5	10.879	SF
J Clark 8N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	857.7	857.7	45.0	40.6	10.165	CC
J Clark 8N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	1,000.0	999.8	45.3	40.1	8.810	ES
J Clark 8N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	10,150.0	10,216.1	799.7	633.9	4.823	SF
J Clark 9C (Codell) - Wellbore #1 - Plan #1 (1-10-18)	1,046.2	1,046.2	30.0	24.5	5.484	CC
J Clark 9C (Codell) - Wellbore #1 - Plan #1 (1-10-18)	1,150.0	1,149.9	30.1	24.1	5.026	ES
J Clark 9C (Codell) - Wellbore #1 - Plan #1 (1-10-18)	12,084.1	12,254.3	607.8	356.1	2.415	SF
Clark 5N65W14EJ Pad Sec.14-T5N-R65W						
Clark 14J-203 (Exist.) - Wellbore #1 - Wellbore #1	0.0	1.0	149.9	149.9	10,000.000	CC
Clark 14J-203 (Exist.) - Wellbore #1 - Wellbore #1	150.0	150.4	150.2	149.7	311.298	ES
Clark 14J-203 (Exist.) - Wellbore #1 - Wellbore #1	1,200.0	1,157.0	235.4	229.3	38.420	SF
Clark 14J-223 (Exist.) - Wellbore #1 - Wellbore #1	762.1	763.1	117.5	113.7	31.152	CC
Clark 14J-223 (Exist.) - Wellbore #1 - Wellbore #1	800.0	800.2	117.6	113.6	29.589	ES
Clark 14J-223 (Exist.) - Wellbore #1 - Wellbore #1	1,200.0	1,184.1	144.3	138.2	23.596	SF
Clark 14J-303 (Exist.) - Wellbore #1 - Wellbore #1	583.5	584.5	133.2	130.5	48.038	CC
Clark 14J-303 (Exist.) - Wellbore #1 - Wellbore #1	600.0	600.7	133.2	130.4	46.599	ES
Clark 14J-303 (Exist.) - Wellbore #1 - Wellbore #1	1,250.0	1,223.6	188.0	181.6	29.442	SF
Clark 14J-343 (Exist.) - Wellbore #1 - Wellbore #1	180.4	181.4	164.5	163.9	257.554	CC
Clark 14J-343 (Exist.) - Wellbore #1 - Wellbore #1	200.0	200.4	164.5	163.8	222.450	ES
Clark 14J-343 (Exist.) - Wellbore #1 - Wellbore #1	1,300.0	1,227.3	326.7	319.9	47.918	SF
Clark 14M-343 (Exist.) - Wellbore #1 - Wellbore #1	948.8	948.8	100.7	96.0	21.332	CC
Clark 14M-343 (Exist.) - Wellbore #1 - Wellbore #1	950.0	950.0	100.7	96.0	21.303	ES
Clark 14M-343 (Exist.) - Wellbore #1 - Wellbore #1	7,550.0	6,977.8	603.3	551.6	11.662	SF
Existing Wells Sec.11-T5N-R65W						
Geisert 7-11 (Synergy - SI) - Wellbore #1 - Wellbore #1	10,605.8	6,815.2	254.9	-5.3	0.980	Level 1, CC, ES, SF

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well J Clark 11N (Nio C)
Project:	SEC.14-T5N-R65W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Clark 5N65W14 1-21 Pad Sec.14-T5N-R65W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	J Clark 11N (Nio C)	**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 (12-18-17)	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4638.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: J Clark 11N (Nio C)
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.56°

Ladder Plot



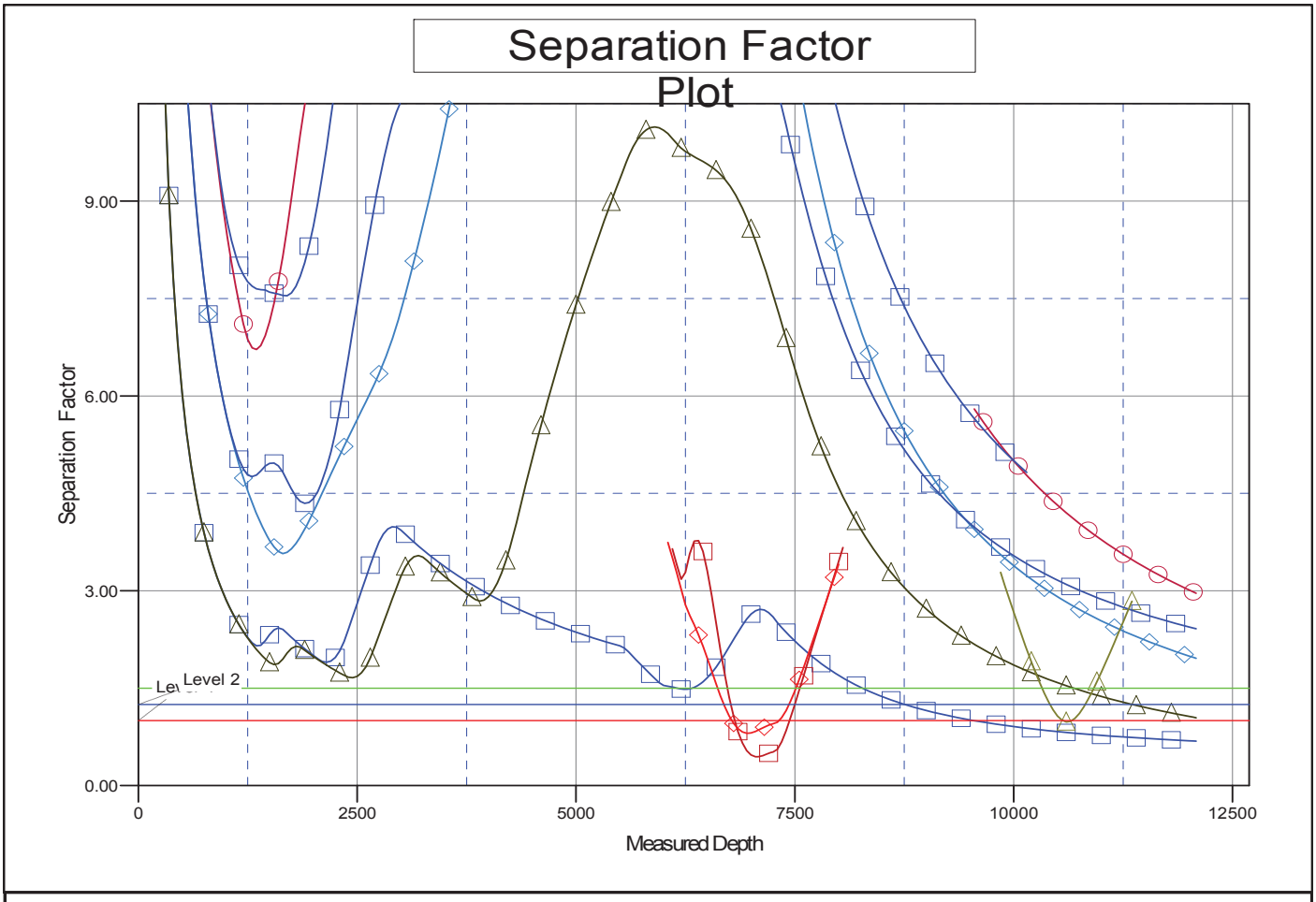
LEGEND

k 10N (Nio B), Wellbore #1, Plan #1 (12-18-17) V0
k 12N (Nio B), Wellbore #1, Plan #1 (1-10-18) V0
k 13N (Nio C), Wellbore #1, Plan #1 (1-10-18) V0
k 14N (Nio B), Wellbore #1, Plan #1 (1-10-18) V0
k 15N (Nio C), Wellbore #1, Plan #1 (1-10-18) V0
k 16N (Nio B), Wellbore #1, Plan #1 (1-10-18) V0
k 1C (Codell), Wellbore #1, Plan #1 (1-10-18) V0
k 2N (Nio B), Wellbore #1, Plan #1 (1-10-18) V0
J Clark 3N (Nio C), Wellbore #1, Plan #1 (1-10-18) V0
J Clark 4N (Nio B), Wellbore #1, Plan #1 (1-10-18) V0
J Clark 5N (Nio C), Wellbore #1, Plan #1 (1-10-18) V0
J Clark 6N (Nio B), Wellbore #1, Plan #1 (1-10-18) V0
J Clark 7N (Nio C), Wellbore #1, Plan #1 (1-10-18) V0
J Clark 8N (Nio B), Wellbore #1, Plan #1 (1-10-18) V0
J Clark 9C (Codell), Wellbore #1, Plan #1 (1-10-18) V0
Clark 14M-343 (Exist.), Wellbore #1, Wellbore #1 V0
Clark 14J-343 (Exist.), Wellbore #1, Wellbore
Clark 14J-303 (Exist.), Wellbore #1, Wellbore
Clark 14J-223 (Exist.), Wellbore #1, Wellbore
Clark 14J-203 (Exist.), Wellbore #1, Wellbore
Brown 23P-321, Wellbore #1, Wellbore #1 V0
Geisert 7-11 (Synergy - SI), Wellbore #1, Well
Brown 23P-201, Wellbore #1, Wellbore #1 V0

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well J Clark 11N (Nio C)
Project:	SEC.14-T5N-R65W	**TVD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Reference Site:	Clark 5N65W14 1-21 Pad Sec.14-T5N-R65W	**MD Reference:**	WELL @ 4638.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	J Clark 11N (Nio C)	**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 (12-18-17)	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4638.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: J Clark 11N (Nio C)
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.56°



LEGEND

k 10N (Nio B), Wellbore #1, Plan #1 (12-18-17) V0
k 12N (Nio B), Wellbore #1, Plan #1 (1-10-18) V0
k 13N (Nio C), Wellbore #1, Plan #1 (1-10-18) V0
k 14N (Nio B), Wellbore #1, Plan #1 (1-10-18) V0
k 15N (Nio C), Wellbore #1, Plan #1 (1-10-18) V0
k 16N (Nio B), Wellbore #1, Plan #1 (1-10-18) V0
k 1C (Codell), Wellbore #1, Plan #1 (1-10-18) V0
k 2N (Nio B), Wellbore #1, Plan #1 (1-10-18) V0
J Clark 3N (Nio C), Wellbore #1, Plan #1 (1-10-18) V0
J Clark 4N (Nio B), Wellbore #1, Plan #1 (1-10-18) V0
J Clark 5N (Nio C), Wellbore #1, Plan #1 (1-10-18) V0
J Clark 6N (Nio B), Wellbore #1, Plan #1 (1-10-18) V0
J Clark 7N (Nio C), Wellbore #1, Plan #1 (1-10-18) V0
J Clark 8N (Nio B), Wellbore #1, Plan #1 (1-10-18) V0
J Clark 9C (Codell), Wellbore #1, Plan #1 (1-10-18) V0
Clark 14M-343 (Exist.), Wellbore #1, Wellbore #1 V0
Clark 14J-343 (Exist.), Wellbore #1, Wellbore
Clark 14J-303 (Exist.), Wellbore #1, Wellbore
Clark 14J-223 (Exist.), Wellbore #1, Wellbore
Clark 14J-203 (Exist.), Wellbore #1, Wellbore
Brown 23P-321, Wellbore #1, Wellbore #1 V0
Geisert 7-11 (Synergy - SI), Wellbore #1, Well
Brown 23P-201, Wellbore #1, Wellbore #1 V0