PDC Energy Inc. DJ Basin

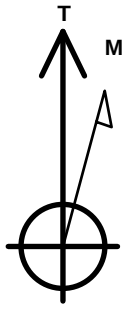
Well Name: **J Clark 13N (Nio C)**
Surface Location: Clark 5N65W14 1-21 Pad Sec.14-T5N-R65W
North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
Ground Elevation: 4615.0

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.0	0.0	1391636.26	3242770.94	40.405168	-104.628243	

RKB - 23' WELL @ 4638.0ft (RKB - 23')

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 550'FNL & 1994'FEL, Sec.14	1.0	0.0	0.0	Point
BHL 500'FNL & 1900'FEL, Sec.11	6843.0	5376.1	100.0	Point
LPL 50'FSL & 1900'FEL, Sec.11	6863.0	599.4	91.3	Point



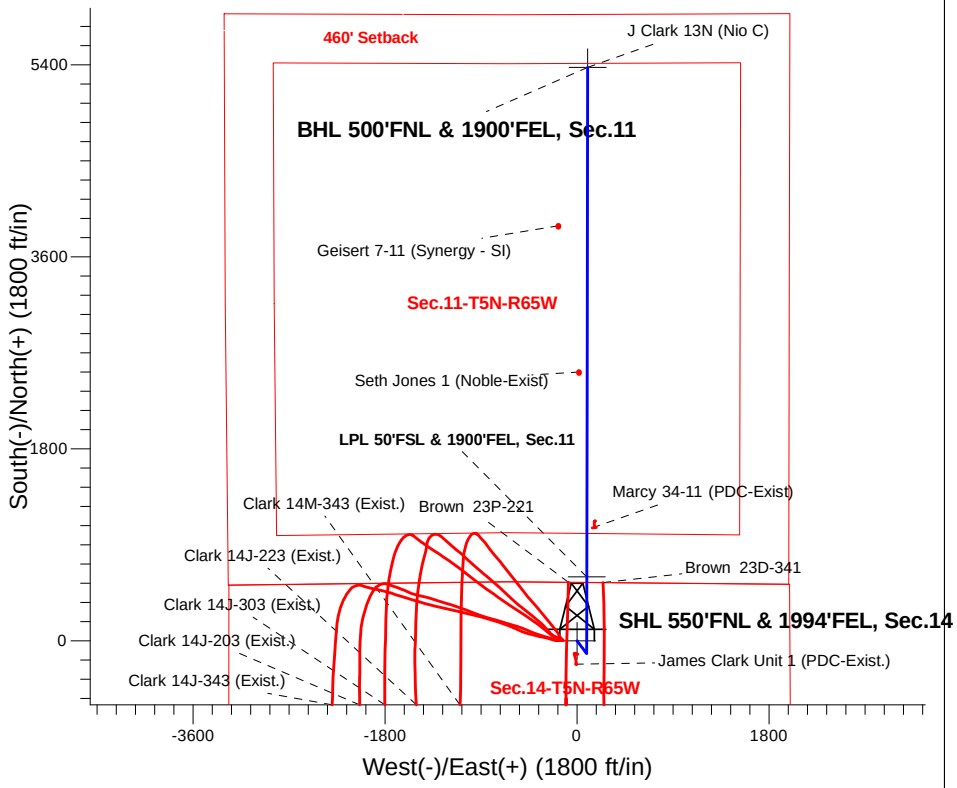
Azimuths to True North
Magnetic North: 7.91°

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 13N (Nio C)
Plan #1 (1-10-18)
14:23, January 12 2018

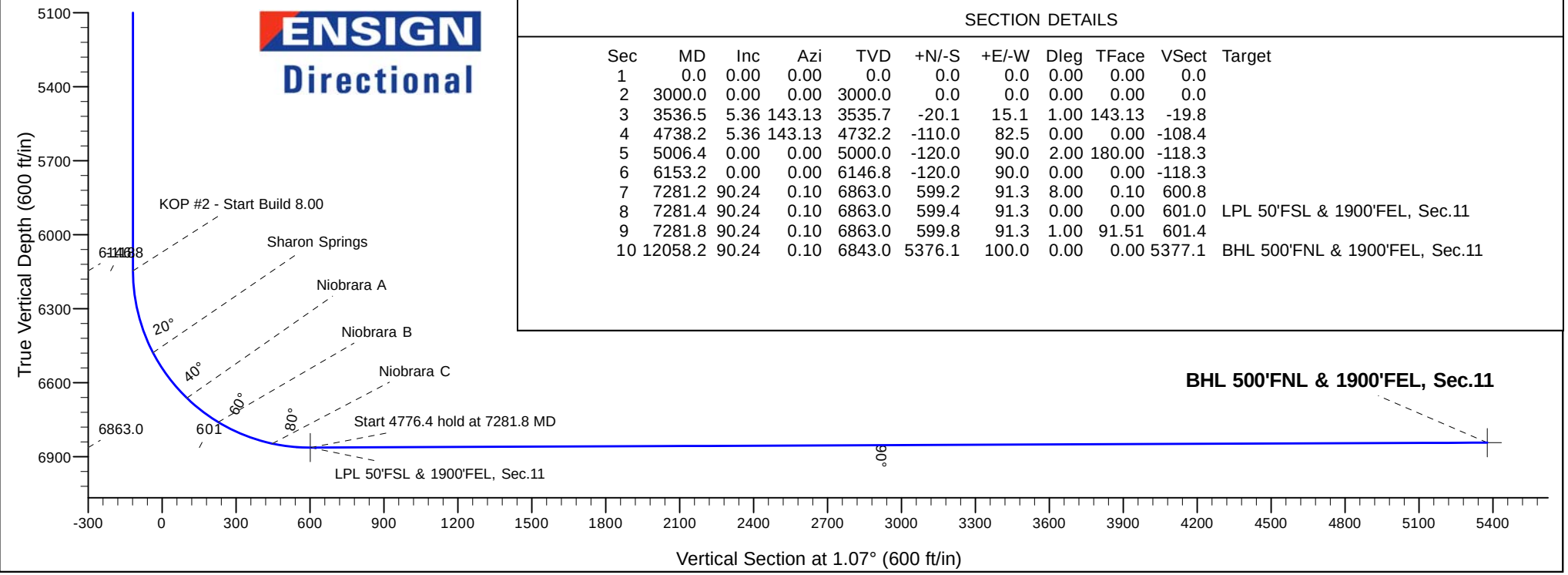
ANNOTATIONS

TVD	MD	Annotation
3000.0	3000.0	KOP - Start Build 1.00
4732.2	4738.2	Start Drop -2.00
6146.8	6153.2	KOP #2 - Start Build 8.00
6863.0	7281.8	Start 4776.4 hold at 7281.8 MD
6843.0	12058.2	TD at 12058.2



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	3000.0	0.00	0.00	3000.0	0.0	0.0	0.00	0.00	0.0	
3	3536.5	5.36	143.13	3535.7	-20.1	15.1	1.00	143.13	-19.8	
4	4738.2	5.36	143.13	4732.2	-110.0	82.5	0.00	0.00	-108.4	
5	5006.4	0.00	0.00	5000.0	-120.0	90.0	2.00	180.00	-118.3	
6	6153.2	0.00	0.00	6146.8	-120.0	90.0	0.00	0.00	-118.3	
7	7281.2	90.24	0.10	6863.0	599.2	91.3	8.00	0.10	600.8	
8	7281.4	90.24	0.10	6863.0	599.4	91.3	0.00	0.00	601.0	LPL 50'FSL & 1900'FEL, Sec.11
9	7281.8	90.24	0.10	6863.0	599.8	91.3	1.00	91.51	601.4	
10	12058.2	90.24	0.10	6843.0	5376.1	100.0	0.00	0.00	5377.1	BHL 500'FNL & 1900'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 13N (Nio C)

Wellbore #1
Plan #1 (1-10-18)

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 13N (Nio C)
Project:	SEC.14-T5N-R65W	**TVD Reference:**	WELL @ 4638.0ft (RKB - 23')
Reference Site:	Clark 5N65W14 1-21 Pad Sec.14-T5N-R65W	**MD Reference:**	WELL @ 4638.0ft (RKB - 23')
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	J Clark 13N (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 (1-10-18)	**Offset TVD Reference:**	Offset Datum

Reference	Plan #1 (1-10-18)		
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	12,058.0	Plan #1 (1-10-18) (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 23D-341 - Wellbore #1 - Wellbore #1	7,226.6	15,213.0	153.5	-77.7	0.664	Level 1, CC, ES, SF
Brown 23P-221 - Wellbore #1 - Wellbore #1	6,943.6	14,986.9	179.5	-43.4	0.805	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)	1,257.5	1,257.5	45.0	38.4	6.789	CC
J Clark 10N (Nio B) - Wellbore #1 - Plan #1 (12-18-17)	1,400.0	1,399.8	45.3	37.9	6.171	ES
J Clark 10N (Nio B) - Wellbore #1 - Plan #1 (12-18-17)	12,058.2	12,018.2	653.3	398.5	2.564	SF
J Clark 11N (Nio C) - Wellbore #1 - Plan #1 (12-18-17)	1,446.9	1,446.9	30.0	22.3	3.908	CC
J Clark 11N (Nio C) - Wellbore #1 - Plan #1 (12-18-17)	1,550.0	1,549.9	30.1	21.9	3.676	ES
J Clark 11N (Nio C) - Wellbore #1 - Plan #1 (12-18-17)	12,058.2	12,084.1	500.1	244.7	1.958	SF
J Clark 12N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	1,632.9	1,632.9	15.0	6.3	1.721	CC
J Clark 12N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	1,750.0	1,749.9	15.2	6.0	1.640	ES
J Clark 12N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	12,058.2	11,986.5	258.4	9.9	1.040	Level 2, SF
J Clark 14N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	1,200.0	1,200.0	15.0	8.7	2.371	CC, ES
J Clark 14N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	12,058.2	12,000.6	258.3	9.3	1.038	Level 2, SF
J Clark 15N (Nio C) - Wellbore #1 - Plan #1 (1-10-18)	800.0	800.0	30.0	25.9	7.263	CC, ES
J Clark 15N (Nio C) - Wellbore #1 - Plan #1 (1-10-18)	12,058.2	12,074.8	499.9	244.6	1.958	SF
J Clark 16N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	200.0	200.0	45.0	44.2	54.488	CC, ES
J Clark 16N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	12,058.2	12,055.0	753.8	498.5	2.953	SF
J Clark 5N (Nio C) - Wellbore #1 - Plan #1 (1-10-18)	294.2	294.2	120.0	118.7	91.091	CC
J Clark 5N (Nio C) - Wellbore #1 - Plan #1 (1-10-18)	500.0	499.6	120.5	118.0	49.714	ES
J Clark 5N (Nio C) - Wellbore #1 - Plan #1 (1-10-18)	1,200.0	1,174.7	178.1	171.6	27.381	SF
J Clark 6N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	488.1	488.1	105.0	102.6	44.050	CC
J Clark 6N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	650.0	649.7	105.2	102.0	32.743	ES
J Clark 6N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	1,300.0	1,285.7	137.6	130.7	20.034	SF
J Clark 7N (Nio C) - Wellbore #1 - Plan #1 (1-10-18)	681.5	681.5	90.0	86.5	26.083	CC
J Clark 7N (Nio C) - Wellbore #1 - Plan #1 (1-10-18)	850.0	849.7	90.3	86.0	20.998	ES
J Clark 7N (Nio C) - Wellbore #1 - Plan #1 (1-10-18)	1,400.0	1,393.2	106.5	99.2	14.561	SF
J Clark 8N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	874.4	874.4	75.0	70.5	16.616	CC
J Clark 8N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	1,050.0	1,049.7	75.4	70.0	13.980	ES
J Clark 8N (Nio B) - Wellbore #1 - Plan #1 (1-10-18)	1,600.0	1,596.0	89.6	81.2	10.703	SF
J Clark 9C (Codell) - Wellbore #1 - Plan #1 (1-10-18)	1,063.5	1,063.5	60.0	54.4	10.792	CC
J Clark 9C (Codell) - Wellbore #1 - Plan #1 (1-10-18)	1,200.0	1,199.8	60.2	53.9	9.649	ES
J Clark 9C (Codell) - Wellbore #1 - Plan #1 (1-10-18)	1,800.0	1,797.9	75.6	66.2	8.023	SF

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well J Clark 13N (Nio C)
Project:	SEC.14-T5N-R65W	**TVD Reference:**	WELL @ 4638.0ft (RKB - 23')
Reference Site:	Clark 5N65W14 1-21 Pad Sec.14-T5N-R65W	**MD Reference:**	WELL @ 4638.0ft (RKB - 23')
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	J Clark 13N (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 (1-10-18)	**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 5N65W14EJ Pad Sec.14-T5N-R65W						
Clark 14J-203 (Exist.) - Wellbore #1 - Wellbore #1	0.0	1.0	179.9			
Clark 14J-203 (Exist.) - Wellbore #1 - Wellbore #1	150.0	150.3	180.2	179.7	373.380	ES
Clark 14J-203 (Exist.) - Wellbore #1 - Wellbore #1	1,700.0	1,618.9	391.2	381.8	41.335	SF
Clark 14J-223 (Exist.) - Wellbore #1 - Wellbore #1	763.5	764.5	147.4	143.6	39.012	CC
Clark 14J-223 (Exist.) - Wellbore #1 - Wellbore #1	800.0	800.0	147.5	143.6	37.123	ES
Clark 14J-223 (Exist.) - Wellbore #1 - Wellbore #1	1,300.0	1,274.0	187.7	181.1	28.345	SF
Clark 14J-303 (Exist.) - Wellbore #1 - Wellbore #1	583.5	584.5	163.2	160.4	58.852	CC
Clark 14J-303 (Exist.) - Wellbore #1 - Wellbore #1	600.0	600.6	163.2	160.4	57.092	ES
Clark 14J-303 (Exist.) - Wellbore #1 - Wellbore #1	1,400.0	1,360.4	243.9	236.7	33.806	SF
Clark 14J-343 (Exist.) - Wellbore #1 - Wellbore #1	180.4	181.4	194.5	193.9	304.634	CC
Clark 14J-343 (Exist.) - Wellbore #1 - Wellbore #1	200.0	200.3	194.5	193.8	263.195	ES
Clark 14J-343 (Exist.) - Wellbore #1 - Wellbore #1	2,650.0	2,449.3	786.6	769.5	45.985	SF
Clark 14M-343 (Exist.) - Wellbore #1 - Wellbore #1	948.8	948.9	130.7	126.0	27.680	CC
Clark 14M-343 (Exist.) - Wellbore #1 - Wellbore #1	950.0	950.0	130.7	126.0	27.645	ES
Clark 14M-343 (Exist.) - Wellbore #1 - Wellbore #1	1,850.0	1,833.2	182.6	173.1	19.163	SF
Existing Wells Sec.11-T5N-R65W						
Geisert 7-11 (Synergy - SI) - Wellbore #1 - Wellbore #1	10,572.6	6,815.2	272.1	11.7	1.045	Level 2, CC, ES, SF
Marcy 34-11 (PDC-Exist) - Wellbore #1 - Wellbore #1	7,742.7	6,839.2	60.4	-126.4	0.323	Level 1, CC, ES, SF
Seth Jones 1 (Noble-Exist) - Wellbore #1 - Wellbore #1	9,202.0	6,830.0	75.8	-153.6	0.331	Level 1, CC, ES, SF
Existing Wells Sec.14-T5N-R65W						
James Clark Unit 1 (PDC-Exist.) - Wellbore #1 - Wellbore	3,945.2	3,917.8	109.5	88.5	5.220	CC
James Clark Unit 1 (PDC-Exist.) - Wellbore #1 - Wellbore	4,050.0	4,022.3	109.7	88.3	5.128	ES
James Clark Unit 1 (PDC-Exist.) - Wellbore #1 - Wellbore	6,150.0	6,123.1	138.2	106.7	4.392	SF

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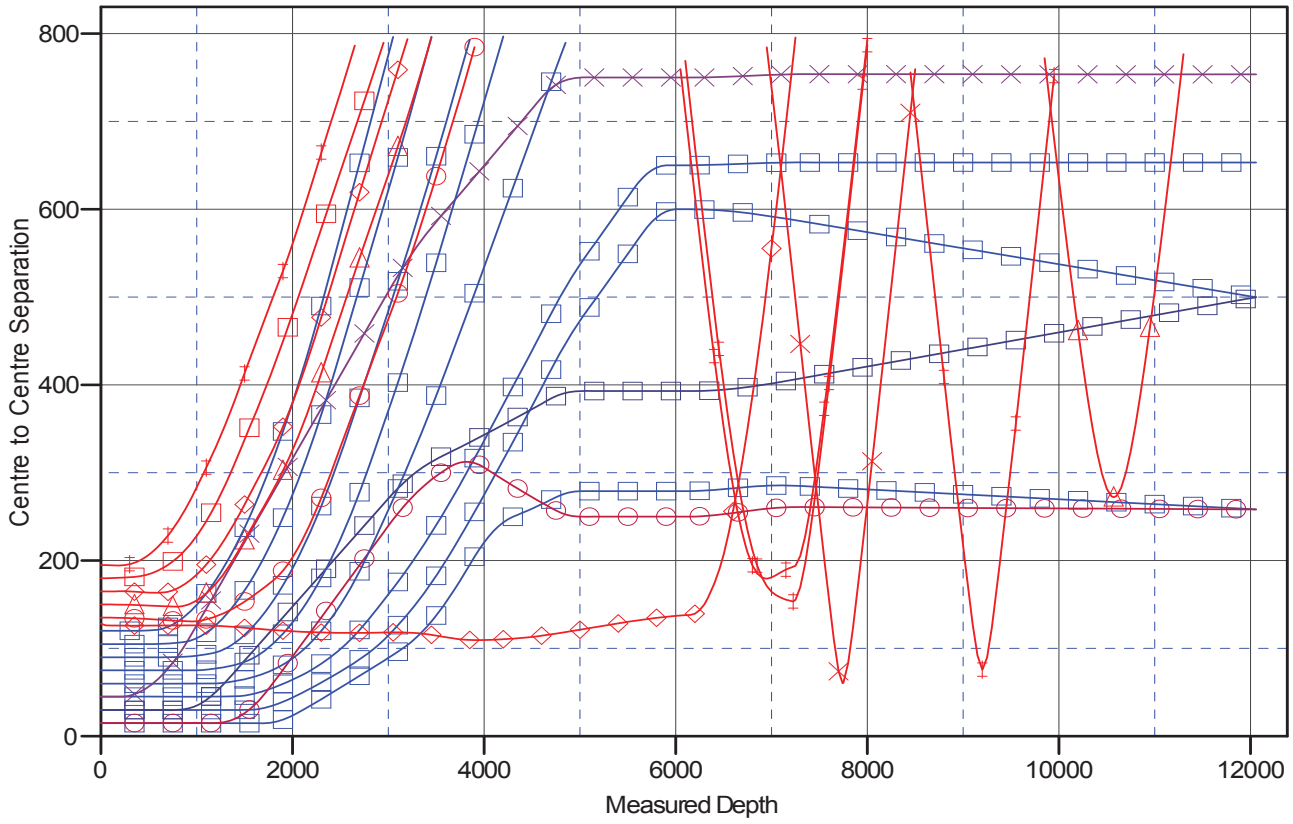
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	J Clark 13N (Nio C)	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.45 sigma
Reference Wellbore	Wellbore #1	**Database:**	US_EDM
Reference Design:	Plan #1 (1-10-18)	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4638.0ft (RKB - 23')
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: J Clark 13N (Nio C)
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.56°

Ladder Plot



L E G E N D

lio B), Wellbore #1, Plan #1 (12-18-17) V0
lio C), Wellbore #1, Plan #1 (12-18-17) V0
lio B), Wellbore #1, Plan #1 (1-10-18) V0
lio B), Wellbore #1, Plan #1 (1-10-18) V0
lio C), Wellbore #1, Plan #1 (1-10-18) V0
lio B), Wellbore #1, Plan #1 (1-10-18) V0
o C), Wellbore #1, Plan #1 (1-10-18) V0
o B), Wellbore #1, Plan #1 (1-10-18) V0

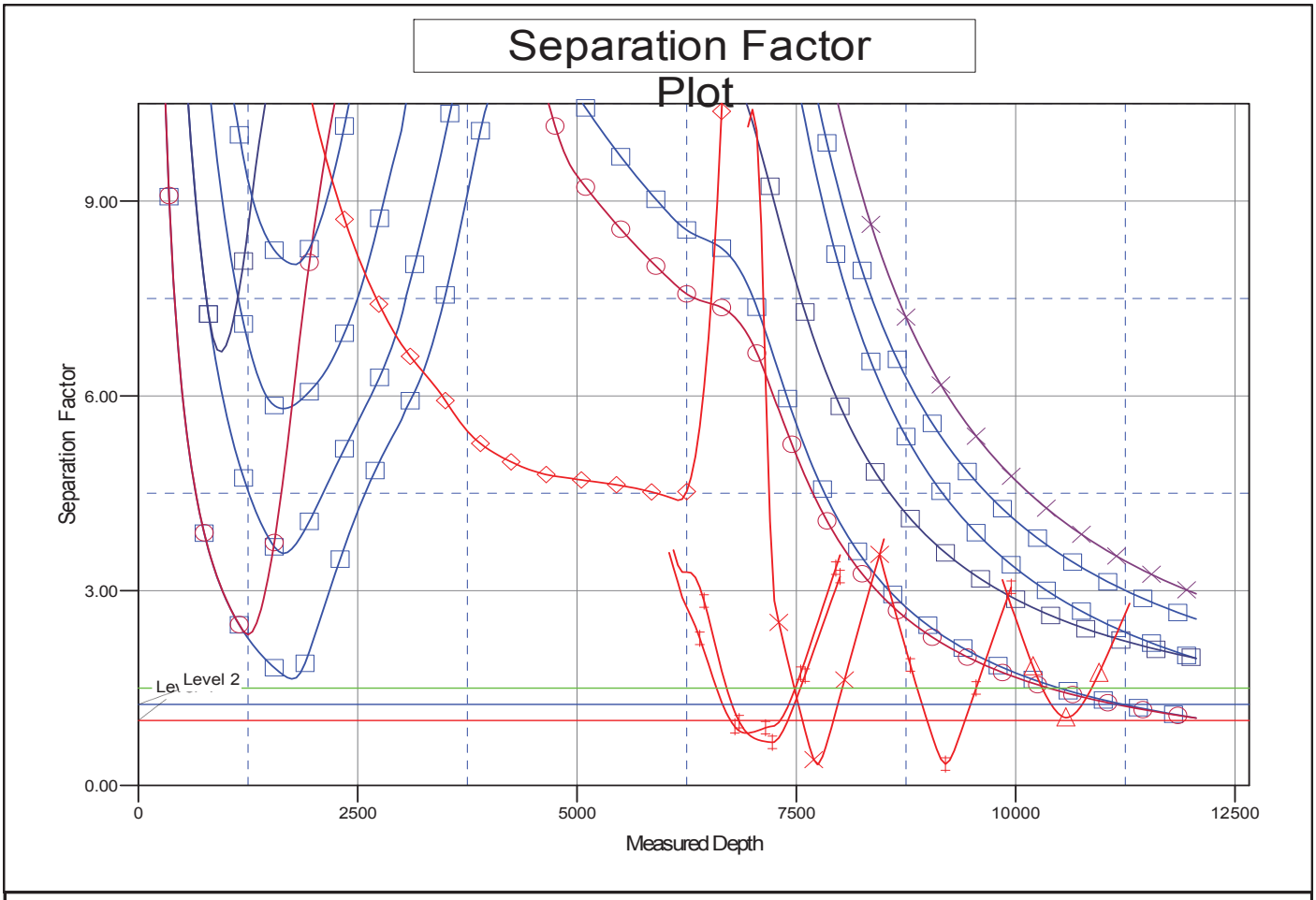
J Clark 7N (Nio C), Wellbore #1, Plan #1 (1-10-18) V0
J Clark 8N (Nio B), Wellbore #1, Plan #1 (1-10-18) V0
J Clark 9C (Codell), Wellbore #1, Plan #1 (1-10-18) V0
Brown 23D-341, Wellbore #1, Wellbore #1 V0
Brown 23P-221, Wellbore #1, Wellbore #1 V0
Clark 14J-203 (Exist.), Wellbore #1, Wellbore #1 V0
Clark 14J-223 (Exist.), Wellbore #1, Wellbore #1 V0
Clark 14J-303 (Exist.), Wellbore #1, Wellbore #1 V0

Clark 14J-343 (Exist.), Wellbore #1, Wellbo
Clark 14M-343 (Exist.), Wellbore #1, Wellb
Marcy 34-11 (PDC-Exist), Wellbore #1, We
Seth Jones 1 (Noble-Exist), Wellbore #1, W
Geisert 7-11 (Synergy - SI), Wellbore #1, W
James Clark Unit 1 (PDC-Exist.), Wellbore

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well J Clark 13N (Nio C)
Project:	SEC.14-T5N-R65W	**TVD Reference:**	WELL @ 4638.0ft (RKB - 23')
Reference Site:	Clark 5N65W14 1-21 Pad Sec.14-T5N-R65W	**MD Reference:**	WELL @ 4638.0ft (RKB - 23')
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	J Clark 13N (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 (1-10-18)	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4638.0ft (RKB - 23')
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000

Coordinates are relative to: J Clark 13N (Nio C)
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.56°



LEGEND

- Jlio B), Wellbore #1, Plan #1 (12-18-17) V0
- Jlio C), Wellbore #1, Plan #1 (12-18-17) V0
- Jlio B), Wellbore #1, Plan #1 (1-10-18) V0
- Jlio B), Wellbore #1, Plan #1 (1-10-18) V0
- Jlio C), Wellbore #1, Plan #1 (1-10-18) V0
- Jlio B), Wellbore #1, Plan #1 (1-10-18) V0
- o C), Wellbore #1, Plan #1 (1-10-18) V0
- o 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
- Brown 23D-341, Wellbore #1, Wellbore #1 V0
- Brown 23P-221, Wellbore #1, Wellbore #1 V0
- Clark 14J-203 (Exist.), Wellbore #1, Wellbore #1 V0
- Clark 14J-223 (Exist.), Wellbore #1, Wellbore #1 V0
- Clark 14J-303 (Exist.), Wellbore #1, Wellbore #1 V0
- Clark 14J-343 (Exist.), Wellbore #1, Wellbo
- Clark 14M-343 (Exist.), Wellbore #1, Wellb
- Marcy 34-11 (PDC-Exist), Wellbore #1, We
- Seth Jones 1 (Noble-Exist), Wellbore #1, W
- Geisert 7-11 (Synergy - SI), Wellbore #1, W
- James Clark Unit 1 (PDC-Exist.), Wellbore