PDC ENERGY

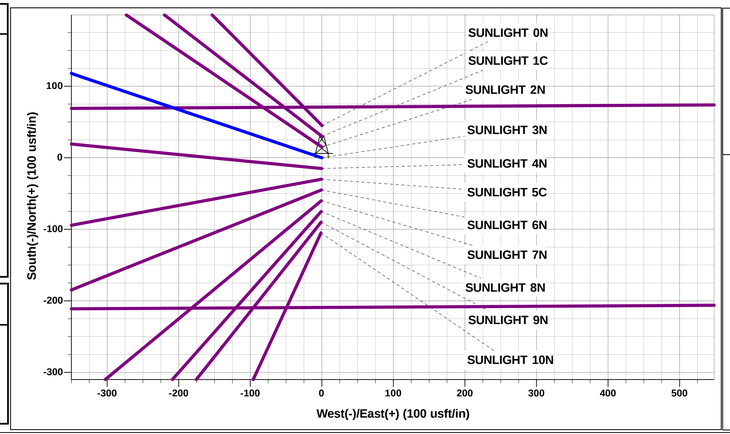
Project: WELD COUNTY, COLORADO (TRUE)
Site: NW SW SEC. 8 T5N R64W 6th P.M. (SUNLIGHT)
Well: SUNLIGHT 3N
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #3

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSect	Dep	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	SHL: 1488ft FSL & 487ft FWL of Sec 8
600.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)
1237.08	1242.45	12.85	288.61	22.89	-67.99	-67.02	71.74	EOB TO 12.85° INC
5216.75	5324.33	12.85	288.61	312.51	-928.28	-915.10	979.47	END OF TANGENT
5853.82	5966.77	0.00	288.61	335.40	-996.26	-982.12	1051.20	EOD TO VERTICAL
5953.82	6066.77	0.00	0.00	335.40	-996.26	-982.12	1051.20	KOP (8°/100ft BUR)
6670.00	7197.15	90.43	89.69	339.30	-274.70	-260.97	1772.77	EP *NEW*: 1830ft FSL & 215ft FWL of Sec 8
6593.37	17396.20	90.43	89.68	395.35	9923.91	9931.78	11971.54	BHL: 1830ft FSL & 150ft FEL of Sec 9

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - SUNLIGHT 3N (P3)	5953.82	335.40	-996.26	40.411451	-104.585382
EP *NEW* - SUNLIGHT 3N (P3)	6670.00	339.30	-274.70	40.411462	-104.582791
BHL - SUNLIGHT 3N (P3)	6593.37	395.35	9923.91	40.411610	-104.546168

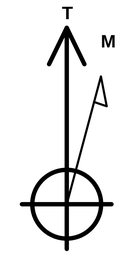


PROPOSED LOCAL COORDINATES:

SHL: 1488ft FSL & 487ft FWL of Sec 8

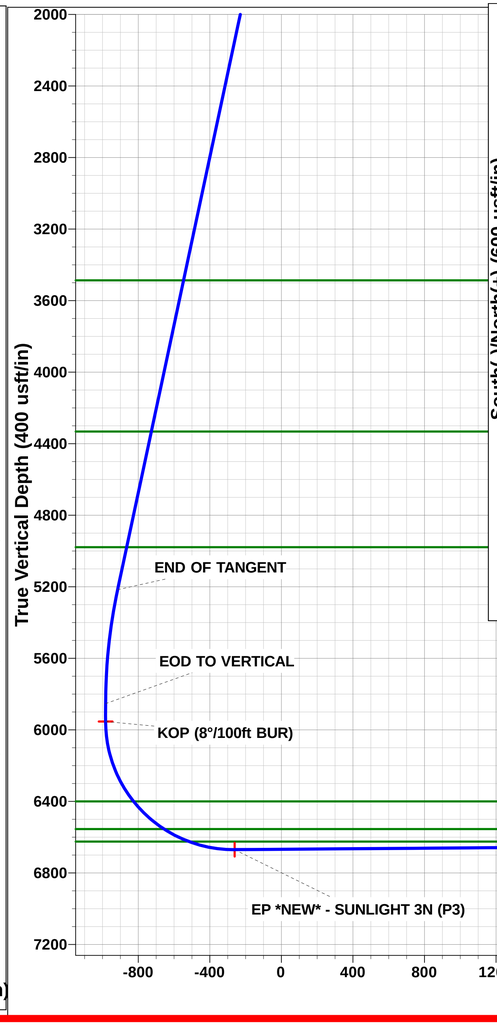
EP *NEW*: 1830ft FSL & 215ft FWL of Sec 8

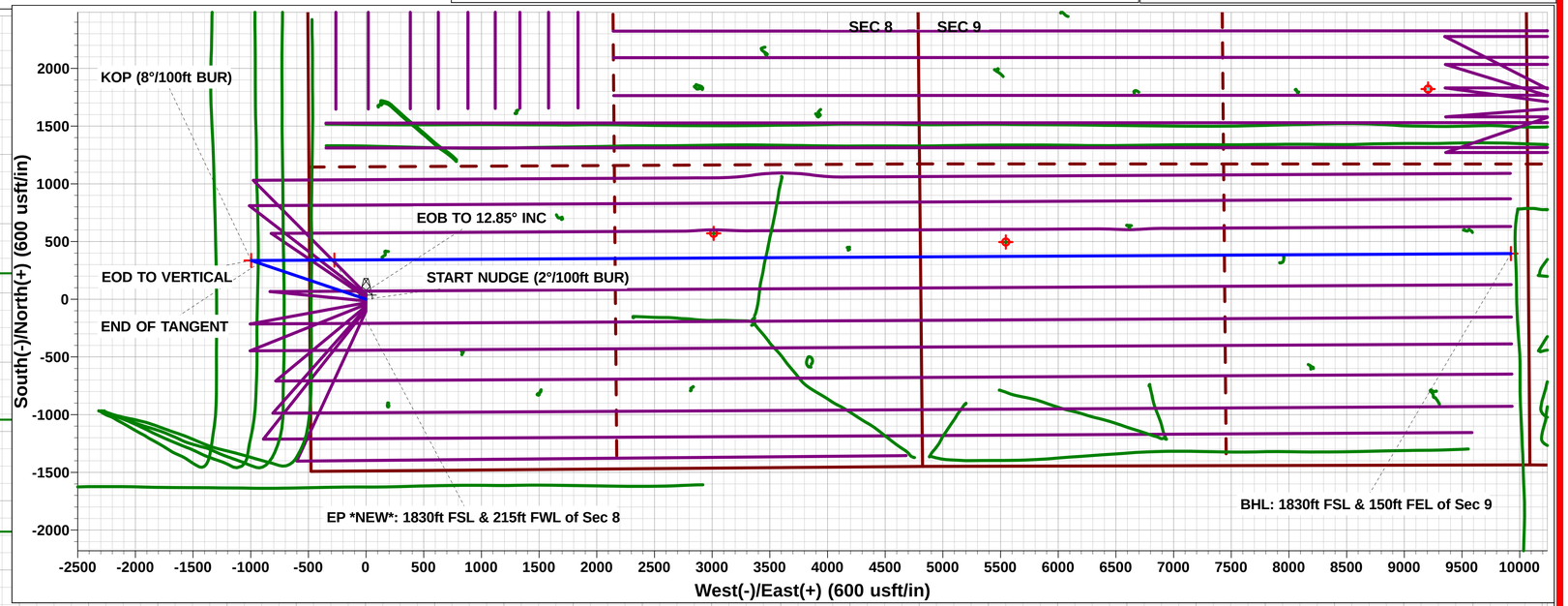
BHL: 1830ft FSL & 150ft FEL of Sec 9



Azimuths to True North
Magnetic North: 8.04°

Magnetic Field
Strength: 52344.2snT
Dip Angle: 66.87°
Date: 10/02/2018
Model: IGRF2015





PDC ENERGY

WELD COUNTY, COLORADO (TRUE)
NW SW SEC. 8 T5N R64W 6th P.M. (SUNLIGHT)
SUNLIGHT 3N

ORIGINAL WELLBORE
PROPOSAL #3

Anticollision Report

03 August, 2018

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SUNLIGHT 3N
Project:	WELD COUNTY, COLORADO (TRUE)	**TVD Reference:**	KB-EST @ 4616.00usft (Original Well Elev)
Reference Site:	NW SW SEC. 8 T5N R64W 6th P.M. (SUNLIGHT)	**MD Reference:**	KB-EST @ 4616.00usft (Original Well Elev)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	SUNLIGHT 3N	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3	**Offset TVD Reference:**	Offset Datum

Reference PROPOSAL #3

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD + Stations Interval 100.00usft	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.00 usft	**Error Surface:**	Elliptical Conic
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 03/08/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	17,396.20	PROPOSAL #3 (ORIGINAL WELLBORE)	MWD	MWD - Standard

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
NE NE SEC. 9 T5N R64W 6th P.M.						
ABDN VERT HEINRICH 1 - Wellbore #1 - Design #1	16,685.90	6,587.72	1,429.91	1,020.08	3.489	CC
ABDN VERT HEINRICH 1 - Wellbore #1 - Design #1	16,700.00	6,587.61	1,429.98	1,019.76	3.486	ES
ABDN VERT HEINRICH 1 - Wellbore #1 - Design #1	16,800.00	6,586.86	1,434.46	1,021.44	3.473	SF
MCGLOTHLIN 9U-204 - ORIGINAL WELLBORE - PROP	17,396.20	7,396.72	3,345.52	3,022.79	10.366	CC, ES, SF
MCGLOTHLIN 9U-232 - ORIGINAL WELLBORE - PROP	17,396.20	6,997.97	3,060.25	2,743.24	9.653	CC, ES, SF
MCGLOTHLIN 9U-234 - ORIGINAL WELLBORE - PROP	17,396.20	7,321.01	2,868.31	2,545.47	8.885	CC, ES, SF
MCGLOTHLIN 9U-332 - ORIGINAL WELLBORE - PROP	17,200.00	6,842.45	2,819.12	2,510.03	9.121	CC
MCGLOTHLIN 9U-332 - ORIGINAL WELLBORE - PROP	17,396.20	7,044.30	2,819.80	2,503.33	8.910	ES, SF
MCGLOTHLIN 9U-334 - ORIGINAL WELLBORE - PROP	17,396.20	7,420.43	3,112.41	2,789.85	9.649	CC, ES, SF
MCGLOTHLIN 9U-402 - ORIGINAL WELLBORE - PROP	17,080.92	6,804.16	3,296.94	2,991.06	10.779	CC
MCGLOTHLIN 9U-402 - ORIGINAL WELLBORE - PROP	17,396.20	7,130.24	3,300.16	2,983.84	10.433	ES, SF
MCGLOTHLIN 9V-202 - ORIGINAL WELLBORE - PROP	17,396.20	6,972.23	2,110.43	1,794.17	6.673	CC, ES, SF
MCGLOTHLIN 9V-212 - ORIGINAL WELLBORE - PROP	17,396.20	6,969.24	2,588.23	2,271.37	8.169	CC, ES, SF
MCGLOTHLIN 9V-312 - ORIGINAL WELLBORE - PROP	17,190.07	6,816.24	2,346.23	2,037.77	7.606	CC
MCGLOTHLIN 9V-312 - ORIGINAL WELLBORE - PROP	17,396.20	7,026.45	2,347.27	2,031.14	7.425	ES, SF
MCGLOTHLIN 9V-314 - ORIGINAL WELLBORE - PROP	17,396.20	7,371.68	2,640.74	2,318.08	8.184	CC, ES, SF
MCGLOTHLIN 9V-414 - ORIGINAL WELLBORE - PROP	17,396.20	7,452.20	2,403.39	2,080.99	7.455	CC, ES, SF

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Reference Site:	NW SW SEC. 8 T5N R64W 6th P.M. (SUNLIGHT)	**MD Reference:**	KB-EST @ 4616.00usft (Original Well Elev)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	SUNLIGHT 3N	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
NW NW SEC. 5 T5N R64W 6th P.M.						
EHRLICH 5E-323 - ORIGINAL WELLBORE - PROPOSA	6,066.77	13,911.73	1,830.05	1,699.05	13.970	SF
EHRLICH 5E-323 - ORIGINAL WELLBORE - PROPOSA	7,497.56	13,911.73	1,308.02	1,253.73	24.093	CC
EHRLICH 5E-323 - ORIGINAL WELLBORE - PROPOSA	7,500.00	13,911.73	1,308.02	1,253.69	24.075	ES
EHRLICH 5E-423 - ORIGINAL WELLBORE - PROPOSA	6,066.77	14,016.08	1,742.31	1,600.05	12.248	SF
EHRLICH 5E-423 - ORIGINAL WELLBORE - PROPOSA	7,215.77	14,016.08	1,317.30	1,267.42	26.410	CC, ES
EHRLICH 5J-203 - ORIGINAL WELLBORE - PROPOSA	6,100.00	13,807.93	2,386.44	2,251.73	17.715	SF
EHRLICH 5J-203 - ORIGINAL WELLBORE - PROPOSA	8,361.39	13,807.93	1,306.51	1,241.49	20.093	CC
EHRLICH 5J-203 - ORIGINAL WELLBORE - PROPOSA	8,400.00	13,807.93	1,307.08	1,241.10	19.811	ES
EHRLICH 5J-223 - ORIGINAL WELLBORE - PROPOSA	8,812.22	13,847.87	1,306.24	1,225.96	16.272	CC, ES
EHRLICH 5J-223 - ORIGINAL WELLBORE - PROPOSA	9,400.00	13,847.87	1,432.39	1,336.58	14.950	SF
EHRLICH 5J-243 - ORIGINAL WELLBORE - PROPOSA	6,100.00	13,804.74	2,018.73	1,900.35	17.053	SF
EHRLICH 5J-243 - ORIGINAL WELLBORE - PROPOSA	7,862.32	13,804.74	1,306.60	1,252.88	24.322	CC
EHRLICH 5J-243 - ORIGINAL WELLBORE - PROPOSA	7,900.00	13,804.74	1,307.15	1,252.60	23.964	ES
EHRLICH 5J-303 - ORIGINAL WELLBORE - PROPOSA	6,100.00	13,875.00	2,213.45	2,086.07	17.376	SF
EHRLICH 5J-303 - ORIGINAL WELLBORE - PROPOSA	8,104.64	13,875.00	1,307.68	1,249.22	22.368	CC, ES
EHRLICH 5J-323 - ORIGINAL WELLBORE - PROPOSA	8,597.79	13,900.07	1,307.71	1,230.20	16.871	CC
EHRLICH 5J-323 - ORIGINAL WELLBORE - PROPOSA	8,600.00	13,900.07	1,307.71	1,230.14	16.859	ES
EHRLICH 5J-323 - ORIGINAL WELLBORE - PROPOSA	9,200.00	13,900.07	1,439.71	1,346.49	15.444	SF
EHRLICH 5M-243 - ORIGINAL WELLBORE - PROPOSA	9,316.23	14,034.07	1,306.06	1,204.91	12.912	CC, ES
EHRLICH 5M-243 - ORIGINAL WELLBORE - PROPOSA	9,800.00	14,034.07	1,392.77	1,278.60	12.199	SF
EHRLICH 5M-343 - ORIGINAL WELLBORE - PROPOSA	9,059.80	13,995.66	1,307.74	1,217.67	14.518	CC
EHRLICH 5M-343 - ORIGINAL WELLBORE - PROPOSA	9,100.00	13,995.66	1,308.36	1,217.22	14.356	ES
EHRLICH 5M-343 - ORIGINAL WELLBORE - PROPOSA	9,600.00	13,995.66	1,414.92	1,310.43	13.542	SF
EXIST DD PJ #8I - Wellbore #1 - Wellbore #1	8,257.29	6,714.66	848.72	800.37	17.554	CC, ES
EXIST DD PJ #8I - Wellbore #1 - Wellbore #1	8,600.00	6,713.10	915.30	858.39	16.082	SF
EXIST VERT JURGENS #8-13 - Wellbore #1 - Wellbore	10,326.94	6,606.67	1,484.08	1,381.77	14.506	CC
EXIST VERT JURGENS #8-13 - Wellbore #1 - Wellbore	10,400.00	6,605.18	1,485.87	1,381.57	14.245	ES
EXIST VERT JURGENS #8-13 - Wellbore #1 - Wellbore	10,900.00	6,593.53	1,590.82	1,472.78	13.476	SF
EXIST VERT PAULINE #5 - Wellbore #1 - Wellbore #1	8,770.45	6,634.08	1,262.79	1,202.25	20.856	CC
EXIST VERT PAULINE #5 - Wellbore #1 - Wellbore #1	8,800.00	6,633.92	1,263.14	1,201.83	20.602	ES
EXIST VERT PAULINE #5 - Wellbore #1 - Wellbore #1	9,500.00	6,630.17	1,458.38	1,378.53	18.263	SF
EXIST VERT PJ #3 - Wellbore #1 - Wellbore #1	7,586.76	6,500.00	1,332.05	1,299.05	40.368	CC
EXIST VERT PJ #3 - Wellbore #1 - Wellbore #1	7,600.00	6,500.00	1,332.12	1,298.88	40.075	ES
EXIST VERT PJ #3 - Wellbore #1 - Wellbore #1	9,200.00	6,500.00	2,092.09	2,020.20	29.103	SF

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Reference Site:	NW SW SEC. 8 T5N R64W 6th P.M. (SUNLIGHT)	**MD Reference:**	KB-EST @ 4616.00usft (Original Well Elev)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	SUNLIGHT 3N	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
NW SW SEC. 8 T5N R64W 6th P.M. (SUNLIGHT)						
ABDN VERT PJ #1 - Wellbore #1 - Wellbore #1	8,961.21	6,400.00	1,203.27	1,138.76	18.651	CC
ABDN VERT PJ #1 - Wellbore #1 - Wellbore #1	9,000.00	6,400.00	1,203.90	1,138.38	18.376	ES
ABDN VERT PJ #1 - Wellbore #1 - Wellbore #1	9,600.00	6,400.00	1,362.32	1,281.08	16.769	SF
EXIST DD KLEIN B #9-13D - Wellbore #1 - Wellbore #1	12,955.21	6,825.05	1,158.07	978.97	6.466	CC
EXIST DD KLEIN B #9-13D - Wellbore #1 - Wellbore #1	13,000.00	6,824.69	1,158.94	978.59	6.426	ES
EXIST DD KLEIN B #9-13D - Wellbore #1 - Wellbore #1	13,200.00	6,823.09	1,183.66	997.74	6.366	SF
EXIST DD KLEIN B #9-14D - Wellbore #1 - Wellbore #1	14,259.30	6,624.98	1,116.44	904.24	5.261	CC
EXIST DD KLEIN B #9-14D - Wellbore #1 - Wellbore #1	14,300.00	6,625.23	1,117.18	903.85	5.237	ES
EXIST DD KLEIN B #9-14D - Wellbore #1 - Wellbore #1	14,400.00	6,625.84	1,125.27	909.14	5.206	SF
EXIST HZ HOP 18E-402 - Wellbore #1 - Wellbore #1	8,303.40	13,016.00	1,964.20	1,746.88	9.038	CC
EXIST HZ HOP 18E-402 - Wellbore #1 - Wellbore #1	10,400.00	15,093.00	1,970.57	1,639.96	5.960	ES
EXIST HZ HOP 18E-402 - Wellbore #1 - Wellbore #1	10,700.00	15,093.00	1,996.32	1,657.50	5.892	SF
EXIST HZ J KLEIN 7T-121 - Wellbore #1 - Wellbore #1	6,400.00	8,191.45	504.88	462.62	11.949	SF
EXIST HZ J KLEIN 7T-121 - Wellbore #1 - Wellbore #1	6,474.50	8,191.43	495.50	454.82	12.182	CC, ES
EXIST HZ J KLEIN 7Y-201 - Wellbore #1 - Wellbore #1	7,010.32	8,432.92	50.39	21.08	1.719	CC, ES, SF
EXIST HZ J KLEIN 7Y-241 - Wellbore #1 - Wellbore #1	6,650.00	8,363.06	276.50	238.91	7.356	SF
EXIST HZ J KLEIN 7Y-241 - Wellbore #1 - Wellbore #1	6,675.20	8,363.56	274.91	238.07	7.462	CC, ES
EXIST HZ J KLEIN 7Y-341 - Wellbore #1 - Wellbore #1	6,800.00	8,459.09	216.31	182.31	6.362	SF
EXIST HZ J KLEIN 7Y-341 - Wellbore #1 - Wellbore #1	6,842.20	8,458.50	210.92	178.23	6.453	CC, ES
EXIST HZ PATRIOT #B16-69HN - Wellbore #1 - Wellbor	17,017.23	11,086.00	1,691.20	1,278.11	4.094	CC
EXIST HZ PATRIOT #B16-69HN - Wellbore #1 - Wellbor	17,100.00	11,086.00	1,693.23	1,277.81	4.076	ES
EXIST HZ PATRIOT #B16-69HN - Wellbore #1 - Wellbor	17,200.00	11,086.00	1,701.05	1,282.83	4.067	SF
EXIST HZ SEYLER B #10-62-1HN - Wellbore #1 - Wellb	17,396.20	6,290.00	1,511.34	1,210.40	5.022	CC, ES, SF
EXIST HZ SEYLER B #10-63-1HN - Wellbore #1 - Wellb	17,396.20	6,359.71	970.57	674.60	3.279	CC, ES, SF
EXIST HZ SEYLER B #15-69HN - Wellbore #1 - Wellbor	17,396.20	6,291.61	1,741.34	1,437.21	5.726	CC, ES, SF
EXIST HZ WACKER 10G-214 - Wellbore #1 - Wellbore #	17,396.20	7,111.01	1,101.39	782.47	3.454	CC, ES, SF
EXIST HZ WACKER 10G-304 - Wellbore #1 - Wellbore #	7,150.00	17,545.76	991.06	660.35	2.997	SF
EXIST HZ WACKER 10G-304 - Wellbore #1 - Wellbore #	8,539.00	16,159.49	960.61	640.33	2.999	ES
EXIST HZ WACKER 10G-304 - Wellbore #1 - Wellbore #	15,974.34	8,721.70	957.29	641.30	3.029	CC
EXIST VERT BAUER OFFSET #9-43 - Wellbore #1 - We	15,634.47	6,600.00	952.04	701.88	3.806	CC, ES
EXIST VERT BAUER OFFSET #9-43 - Wellbore #1 - We	15,700.00	6,600.00	954.30	702.29	3.787	SF
EXIST VERT JURGENS #8-2 - Wellbore #1 - Wellbore #	10,276.83	6,632.42	1,149.39	1,048.25	11.365	CC
EXIST VERT JURGENS #8-2 - Wellbore #1 - Wellbore #	10,300.00	6,632.06	1,149.62	1,047.85	11.297	ES
EXIST VERT JURGENS #8-2 - Wellbore #1 - Wellbore #	10,600.00	6,627.40	1,193.95	1,083.96	10.855	SF
EXIST VERT JURGENS #B8-16 - Wellbore #1 - Wellbore	11,326.00	6,607.23	923.53	793.84	7.121	CC, ES
EXIST VERT JURGENS #B8-16 - Wellbore #1 - Wellbore	11,500.00	6,607.78	939.78	805.27	6.987	SF
EXIST VERT PAULINE 1 - Wellbore #1 - Wellbore #1	600.00	581.07	920.60	918.89	539.587	ES
EXIST VERT PAULINE 1 - Wellbore #1 - Wellbore #1	605.87	586.84	920.59	918.89	541.015	CC
EXIST VERT PAULINE 1 - Wellbore #1 - Wellbore #1	9,000.00	6,500.00	1,837.13	1,770.98	27.769	SF
EXIST VERT PAULINE 2 - Wellbore #1 - Wellbore #1	7,613.43	6,450.00	198.29	179.45	10.529	CC, ES, SF
EXIST VERT PAULINE PJ #5 - Wellbore #1 - Wellbore #	8,295.16	6,400.00	830.22	783.01	17.586	CC
EXIST VERT PAULINE PJ #5 - Wellbore #1 - Wellbore #	8,300.00	6,400.00	830.23	782.91	17.544	ES
EXIST VERT PAULINE PJ #5 - Wellbore #1 - Wellbore #	8,700.00	6,400.00	923.67	866.65	16.200	SF
EXIST VERT PETERSON B9-16 - Wellbore #1 - Wellbor	16,758.10	6,483.19	1,282.05	1,001.02	4.562	CC
EXIST VERT PETERSON B9-16 - Wellbore #1 - Wellbor	16,800.00	6,484.61	1,282.74	1,000.51	4.545	ES
EXIST VERT PETERSON B9-16 - Wellbore #1 - Wellbor	16,900.00	6,488.03	1,289.87	1,004.81	4.525	SF
SUNLIGHT 0N - ORIGINAL WELLBORE - PROPOSAL #	300.00	300.00	45.00	43.92	41.968	CC, ES
SUNLIGHT 0N - ORIGINAL WELLBORE - PROPOSAL #	17,396.20	17,453.55	695.01	100.13	1.168	Level 2, SF
SUNLIGHT 10N - ORIGINAL WELLBORE - PROPOSAL	300.00	300.00	105.00	103.93	97.936	CC, ES
SUNLIGHT 10N - ORIGINAL WELLBORE - PROPOSAL	12,400.00	11,846.45	1,739.92	1,440.70	5.815	SF
SUNLIGHT 1C - ORIGINAL WELLBORE - PROPOSAL #	400.00	400.00	30.02	28.50	19.729	CC
SUNLIGHT 1C - ORIGINAL WELLBORE - PROPOSAL #	17,396.20	17,600.25	508.39	-49.85	0.911	Level 1, ES, SF

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SUNLIGHT 3N
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Reference Site:	NW SW SEC. 8 T5N R64W 6th P.M. (SUNLIGHT)	**MD Reference:**	KB-EST @ 4616.00usft (Original Well Elev)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	SUNLIGHT 3N	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
NW SW SEC. 8 T5N R64W 6th P.M. (SUNLIGHT)						
SUNLIGHT 2N - ORIGINAL WELLBORE - PROPOSAL #	500.00	500.00	15.01	13.04	7.615	CC
SUNLIGHT 2N - ORIGINAL WELLBORE - PROPOSAL #	17,396.20	17,275.74	248.32	-312.48	0.443	Level 1, ES, SF
SUNLIGHT 4N - ORIGINAL WELLBORE - PROPOSAL #	600.00	600.00	15.01	12.59	6.200	CC
SUNLIGHT 4N - ORIGINAL WELLBORE - PROPOSAL #	17,396.20	17,272.99	280.70	-288.57	0.493	Level 1, ES, SF
SUNLIGHT 5C - ORIGINAL WELLBORE - PROPOSAL #	600.00	600.00	29.98	27.56	12.387	CC
SUNLIGHT 5C - ORIGINAL WELLBORE - PROPOSAL #	17,396.20	17,554.09	580.69	13.95	1.025	Level 2, ES, SF
SUNLIGHT 6N - ORIGINAL WELLBORE - PROPOSAL #	600.00	600.00	45.00	42.57	18.587	CC, ES
SUNLIGHT 6N - ORIGINAL WELLBORE - PROPOSAL #	17,396.20	17,405.75	782.13	186.78	1.314	Level 3, SF
SUNLIGHT 7N - ORIGINAL WELLBORE - PROPOSAL #	600.00	600.00	60.01	57.58	24.788	CC, ES
SUNLIGHT 7N - ORIGINAL WELLBORE - PROPOSAL #	17,396.20	17,257.41	1,046.64	457.99	1.778	SF
SUNLIGHT 8N - ORIGINAL WELLBORE - PROPOSAL #	500.00	500.00	75.02	73.04	38.056	CC, ES
SUNLIGHT 8N - ORIGINAL WELLBORE - PROPOSAL #	17,396.20	17,249.29	1,323.38	733.12	2.242	SF
SUNLIGHT 9N - ORIGINAL WELLBORE - PROPOSAL #	400.00	400.00	89.99	88.47	59.139	CC, ES
SUNLIGHT 9N - ORIGINAL WELLBORE - PROPOSAL #	17,200.00	17,117.86	1,557.19	980.74	2.701	SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SUNLIGHT 3N
Project:	WELD COUNTY, COLORADO (TRUE)	**TVD Reference:**	KB-EST @ 4616.00usft (Original Well Elev)
Reference Site:	NW SW SEC. 8 T5N R64W 6th P.M. (SUNLIGHT)	**MD Reference:**	KB-EST @ 4616.00usft (Original Well Elev)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	SUNLIGHT 3N	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
SW NW SEC. 10 T5N R64W 6th P.M.						
ABDN VERT BLOSKAS #13-9 - Wellbore #1 - Design #1	13,018.43	6,601.30	124.86	-181.85	0.407	Level 1, CC, ES, SF
ABDN VERT HEINRICH #1 - Wellbore #1 - Design #1	16,685.90	6,585.72	1,429.91	1,022.11	3.506	CC
ABDN VERT HEINRICH #1 - Wellbore #1 - Design #1	16,700.00	6,585.61	1,429.98	1,021.79	3.503	ES
ABDN VERT HEINRICH #1 - Wellbore #1 - Design #1	16,800.00	6,584.86	1,434.46	1,023.48	3.490	SF
EXIST DD JURGENS PC #B8-22D - Wellbore #1 - Wellb	11,081.15	6,770.38	700.37	562.56	5.082	CC
EXIST DD JURGENS PC #B8-22D - Wellbore #1 - Wellb	11,100.00	6,770.27	700.63	562.29	5.065	ES
EXIST DD JURGENS PC #B8-22D - Wellbore #1 - Wellb	11,200.00	6,769.67	710.39	569.29	5.035	SF
EXIST DD JURGENS PC #B8-24D - Wellbore #1 - Wellb	9,784.58	6,786.93	513.66	403.83	4.677	CC
EXIST DD JURGENS PC #B8-24D - Wellbore #1 - Wellb	9,800.00	6,786.84	513.90	403.64	4.661	ES
EXIST DD JURGENS PC #B8-24D - Wellbore #1 - Wellb	9,900.00	6,786.25	526.47	413.50	4.660	SF
EXIST DD JURGENS STATE #B16-30D - Wellbore #1 -	12,208.66	6,928.80	1,736.52	1,553.66	9.496	CC
EXIST DD JURGENS STATE #B16-30D - Wellbore #1 -	12,300.00	6,929.88	1,738.92	1,553.52	9.379	ES
EXIST DD JURGENS STATE #B16-30D - Wellbore #1 -	12,700.00	6,934.50	1,804.69	1,608.15	9.182	SF
EXIST DD PJ #8I - Wellbore #1 - Wellbore #1	8,258.50	6,720.22	864.05	800.04	13.500	CC
EXIST DD PJ #8I - Wellbore #1 - Wellbore #1	8,300.00	6,720.03	865.04	800.03	13.306	ES
EXIST DD PJ #8I - Wellbore #1 - Wellbore #1	8,600.00	6,718.64	929.08	856.55	12.809	SF
EXIST DD WACKER B #10-20D - Wellbore #1 - Wellbore	17,396.20	6,774.79	1,638.75	1,316.67	5.088	CC, ES, SF
EXIST HZ SEYLOR #B10-64-1HN - Wellbore #1 - Wellbo	17,396.20	6,420.00	505.09	301.47	2.481	CC, ES, SF
EXIST HZ SEYLOR STATE #B15-79HNM - Wellbore #1	17,396.20	6,746.17	75.68	-67.81	0.527	Level 1, CC, ES, SF
EXIST VERT BAUER #9-1 - Wellbore #1 - Wellbore #1	15,391.22	6,576.38	68.22	-175.40	0.280	Level 1, CC, ES, SF
EXIST VERT BLOSKAS #12-9 - Wellbore #1 - Wellbore	13,002.29	6,691.93	1,561.13	1,384.81	8.854	CC, ES
EXIST VERT BLOSKAS #12-9 - Wellbore #1 - Wellbore	13,400.00	6,700.00	1,610.93	1,423.60	8.599	SF
EXIST VERT BLOSKAS #9-23 - Wellbore #1 - Wellbore	14,107.51	6,589.85	260.57	53.32	1.257	Level 3, CC, ES, SF
EXIST VERT BLOSKAS BOND #9D - Wellbore #1 - Wel	13,559.97	6,657.35	2,079.87	1,887.98	10.839	CC
EXIST VERT BLOSKAS BOND #9D - Wellbore #1 - Wel	13,600.00	6,659.47	2,080.25	1,887.25	10.778	ES
EXIST VERT BLOSKAS BOND #9D - Wellbore #1 - Wel	14,200.00	6,693.37	2,175.85	1,966.22	10.380	SF
EXIST VERT BOND #1 - Wellbore #1 - Wellbore #1	14,174.96	6,640.95	1,419.95	1,211.03	6.797	CC
EXIST VERT BOND #1 - Wellbore #1 - Wellbore #1	14,200.00	6,642.09	1,420.17	1,210.56	6.775	ES
EXIST VERT BOND #1 - Wellbore #1 - Wellbore #1	14,400.00	6,651.06	1,437.63	1,222.49	6.682	SF
EXIST VERT BOND #32-9 - Wellbore #1 - Wellbore #1	15,564.94	6,584.11	1,410.59	1,162.92	5.696	CC
EXIST VERT BOND #32-9 - Wellbore #1 - Wellbore #1	15,600.00	6,583.85	1,411.02	1,162.38	5.675	ES
EXIST VERT BOND #32-9 - Wellbore #1 - Wellbore #1	15,800.00	6,582.35	1,430.04	1,175.79	5.625	SF
EXIST VERT DR B #10-12 - Wellbore #1 - Wellbore #1	17,396.20	6,572.15	800.24	500.90	2.673	CC, ES, SF
EXIST VERT JURGENS #8-1 - Wellbore #1 - Wellbore #	11,662.20	6,611.54	70.39	-68.61	0.506	Level 1, CC, ES, SF
EXIST VERT JURGENS #8-13 - Wellbore #1 - Wellbore	10,326.89	6,606.62	1,484.06	1,381.76	14.506	CC
EXIST VERT JURGENS #8-13 - Wellbore #1 - Wellbore	10,400.00	6,605.12	1,485.86	1,381.55	14.245	ES
EXIST VERT JURGENS #8-13 - Wellbore #1 - Wellbore	10,900.00	6,593.45	1,590.83	1,472.78	13.476	SF
EXIST VERT JURGENS #8-14 - Wellbore #1 - Wellbore	11,376.28	6,592.06	1,244.14	1,112.48	9.450	CC
EXIST VERT JURGENS #8-14 - Wellbore #1 - Wellbore	11,400.00	6,591.53	1,244.37	1,112.05	9.404	ES
EXIST VERT JURGENS #8-14 - Wellbore #1 - Wellbore	11,700.00	6,584.71	1,285.55	1,144.93	9.142	SF
EXIST VERT JURGENS PC #B8-23 - Wellbore #1 - Well	10,811.76	6,612.53	584.74	468.86	5.046	CC, ES
EXIST VERT JURGENS PC #B8-23 - Wellbore #1 - Well	10,900.00	6,610.66	591.36	473.05	4.999	SF
EXIST VERT JURGENS PM B #B8-10 - Wellbore #1 - D	10,486.08	6,642.32	213.73	-22.41	0.905	Level 1, CC, ES, SF
EXIST VERT LOWER LATHAM #8-15 - Wellbore #1 - W	10,941.19	6,563.58	1,769.71	1,650.35	14.826	CC
EXIST VERT LOWER LATHAM #8-15 - Wellbore #1 - W	11,000.00	6,562.35	1,770.69	1,649.70	14.635	ES
EXIST VERT LOWER LATHAM #8-15 - Wellbore #1 - W	11,700.00	6,547.97	1,925.47	1,785.15	13.722	SF
EXIST VERT PAULINE #5 - Wellbore #1 - Wellbore #1	8,770.45	6,634.08	1,262.79	1,202.24	20.856	CC
EXIST VERT PAULINE #5 - Wellbore #1 - Wellbore #1	8,800.00	6,633.92	1,263.14	1,201.82	20.602	ES
EXIST VERT PAULINE #5 - Wellbore #1 - Wellbore #1	9,500.00	6,630.17	1,458.38	1,378.52	18.263	SF
EXIST VERT PJ #2 - Wellbore #1 - Wellbore #1	9,125.61	6,400.00	446.45	382.92	7.028	CC, ES
EXIST VERT PJ #2 - Wellbore #1 - Wellbore #1	9,200.00	6,400.00	452.60	387.37	6.938	SF
EXIST VERT PJ #3 - Wellbore #1 - Wellbore #1	7,586.76	6,500.00	1,332.05	1,299.05	40.368	CC

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

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well SUNLIGHT 3N
Project:	WELD COUNTY, COLORADO (TRUE)	**TVD Reference:**	KB-EST @ 4616.00usft (Original Well Elev)
Reference Site:	NW SW SEC. 8 T5N R64W 6th P.M. (SUNLIGHT)	**MD Reference:**	KB-EST @ 4616.00usft (Original Well Elev)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	SUNLIGHT 3N	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	**Database:**	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
SW NW SEC. 10 T5N R64W 6th P.M.						
EXIST VERT PJ #3 - Wellbore #1 - Wellbore #1	7,600.00	6,500.00	1,332.12	1,298.88	40.075	ES
EXIST VERT PJ #3 - Wellbore #1 - Wellbore #1	9,200.00	6,500.00	2,092.09	2,020.20	29.103	SF
EXIST VERT WACKER #1 - Wellbore #1 - Wellbore #1	17,396.20	6,592.34	1,786.29	1,487.06	5.970	CC, ES, SF
EXIST VERT WILLIAMS #1 - Wellbore #1 - Wellbore #1	17,061.84	6,569.52	187.90	-101.87	0.648	Level 1, CC, ES, SF
WACKER 10F-204 - ORIGINAL WELLBORE - PROPOS	17,396.20	7,259.99	2,161.11	1,839.65	6.723	CC, ES, SF
WACKER 10F-232 - ORIGINAL WELLBORE - PROPOS	17,396.20	7,036.11	1,639.07	1,316.69	5.084	CC, ES, SF
WACKER 10F-234 - ORIGINAL WELLBORE - PROPOS	17,396.20	7,224.50	1,701.11	1,379.83	5.295	CC, ES, SF
WACKER 10F-302 - ORIGINAL WELLBORE - PROPOS	17,174.24	6,900.48	1,882.03	1,566.44	5.964	CC
WACKER 10F-302 - ORIGINAL WELLBORE - PROPOS	17,396.20	7,125.05	1,883.80	1,561.80	5.850	ES, SF
WACKER 10F-304 - ORIGINAL WELLBORE - PROPOS	17,396.20	7,311.73	1,933.72	1,612.87	6.027	CC, ES, SF
WACKER 10G-212 - ORIGINAL WELLBORE - PROPOS	17,396.20	7,015.05	1,184.78	862.80	3.680	CC, ES, SF
WACKER 10G-214 - ORIGINAL WELLBORE - PROPOS	17,396.20	7,217.05	1,135.56	814.40	3.536	CC, ES, SF
WACKER 10G-302 - ORIGINAL WELLBORE - PROPOS	17,162.54	6,859.58	876.98	562.16	2.786	CC
WACKER 10G-302 - ORIGINAL WELLBORE - PROPOS	17,300.00	6,988.22	879.31	561.37	2.766	ES
WACKER 10G-302 - ORIGINAL WELLBORE - PROPOS	17,396.20	7,092.26	881.98	562.02	2.757	SF
WACKER 10G-304 - ORIGINAL WELLBORE - PROPOS	17,396.20	7,315.06	927.57	608.81	2.910	CC, ES, SF
WACKER 10G-312 - ORIGINAL WELLBORE - PROPOS	17,168.84	6,867.59	1,436.92	1,121.78	4.560	CC
WACKER 10G-312 - ORIGINAL WELLBORE - PROPOS	17,396.20	7,095.98	1,439.56	1,118.16	4.479	ES, SF
WACKER 10G-314 - ORIGINAL WELLBORE - PROPOS	17,396.20	7,282.53	1,376.90	1,056.25	4.294	CC, ES, SF

Offset Design NE NE SEC. 9 T5N R64W 6th P.M. - ABDN VERT HEINRICH 1 - Wellbore #1 - Design #1

Survey Program: 0-INC

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	78.81	1,821.27	9,205.67	9,384.11				
100.00	100.00	89.00	89.00	0.09	1.13	78.81	1,821.27	9,205.67	9,384.10	9,382.89	1.21	7,741.391	
200.00	200.00	189.00	189.00	0.31	3.29	78.81	1,821.27	9,205.67	9,384.10	9,380.50	3.60	2,605.967	
300.00	300.00	289.00	289.00	0.54	5.39	78.81	1,821.27	9,205.67	9,384.10	9,378.18	5.92	1,583.919	
400.00	400.00	389.00	389.00	0.76	7.43	78.81	1,821.27	9,205.67	9,384.10	9,375.90	8.20	1,145.089	
500.00	500.00	489.00	489.00	0.99	9.46	78.81	1,821.27	9,205.67	9,384.10	9,373.65	10.45	897.984	
600.00	600.00	589.00	589.00	1.21	11.49	78.81	1,821.27	9,205.67	9,384.10	9,371.40	12.70	739.001	
700.00	699.98	688.98	688.98	1.43	13.51	150.19	1,821.27	9,205.67	9,385.61	9,370.69	14.93	628.754	
800.00	799.84	788.84	788.84	1.64	15.52	150.16	1,821.27	9,205.67	9,390.16	9,373.03	17.13	548.155	
900.00	899.45	888.45	888.45	1.88	17.53	150.11	1,821.27	9,205.67	9,397.72	9,378.41	19.31	486.638	
1,000.00	998.70	987.70	987.70	2.14	19.53	150.05	1,821.27	9,205.67	9,408.30	9,386.84	21.47	438.288	
1,100.00	1,097.47	1,086.47	1,086.47	2.44	21.52	149.96	1,821.27	9,205.67	9,421.89	9,398.30	23.59	399.395	
1,200.00	1,195.62	1,184.62	1,184.62	2.78	23.50	149.84	1,821.27	9,205.67	9,438.48	9,412.79	25.68	367.514	
1,242.45	1,237.07	1,226.07	1,226.07	2.95	24.33	149.79	1,821.27	9,205.67	9,446.42	9,419.86	26.56	355.674	
1,300.00	1,293.19	1,282.19	1,282.19	3.18	25.46	149.83	1,821.27	9,205.67	9,457.55	9,429.72	27.83	339.834	
1,400.00	1,390.68	1,379.68	1,379.68	3.60	27.42	149.90	1,821.27	9,205.67	9,476.90	9,446.86	30.05	315.417	
1,500.00	1,488.18	1,477.18	1,477.18	4.03	29.38	149.96	1,821.27	9,205.67	9,496.27	9,464.00	32.27	294.286	
1,600.00	1,585.68	1,574.68	1,574.68	4.48	31.35	150.03	1,821.27	9,205.67	9,515.65	9,481.15	34.50	275.835	
1,700.00	1,683.17	1,672.17	1,672.17	4.93	33.31	150.10	1,821.27	9,205.67	9,535.04	9,498.31	36.73	259.594	
1,800.00	1,780.67	1,769.67	1,769.67	5.39	35.27	150.16	1,821.27	9,205.67	9,554.44	9,515.48	38.97	245.195	
1,900.00	1,878.16	1,867.16	1,867.16	5.86	37.23	150.23	1,821.27	9,205.67	9,573.86	9,532.65	41.21	232.345	
2,000.00	1,975.66	1,964.66	1,964.66	6.33	39.19	150.29	1,821.27	9,205.67	9,593.29	9,549.84	43.45	220.811	
2,100.00	2,073.16	2,062.16	2,062.16	6.80	41.15	150.36	1,821.27	9,205.67	9,612.73	9,567.04	45.69	210.402	