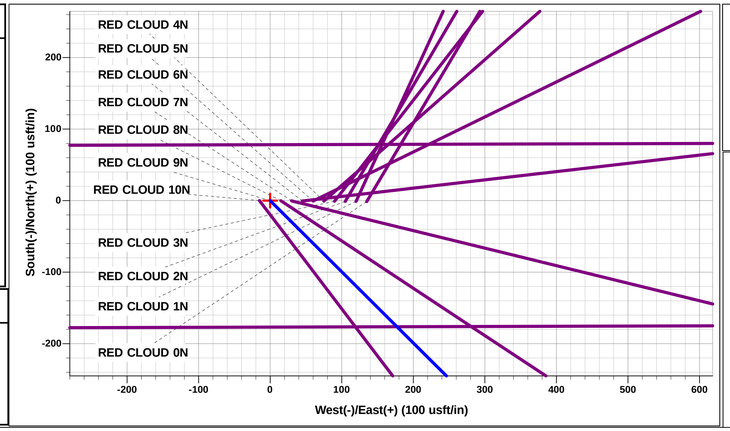
Project: WELD COUNTY, COLORADO (TRUE)
Site: SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)
Well: RED CLOUD 9N
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #3

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: 1528ft FNL & 764ft FEL of Sec 1
1200.00	1200.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)
1979.44	1989.39	15.79	134.84	-76.21	76.63	-70.37	108.07	EOB TO 15.79° INC
4899.36	5023.78	15.79	134.84	-658.38	662.00	-607.94	933.65	END OF TANGENT
5678.80	5813.17	0.00	0.00	-734.59	738.63	-678.31	1041.72	EOD TO VERTICAL
5778.80	5913.17	0.00	0.00	-734.59	738.63	-678.31	1041.72	KOP (8°/100ft BUR)
6495.00	7038.17	90.00	269.84	-736.58	22.44	35.80	1757.92	EP: 2265ft FNL & 737ft FEL of Sec 1
6495.00	16697.28	90.00	269.84	-763.37	-9636.63	9666.82	11417.03	BHL: 2265ft FNL & 50ft FWL of Sec 2

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - RED CLOUD 9N (P3)	5778.80	-734.59	738.63	40.342468	-104.489627
EP - RED CLOUD 9N (P3)	6495.00	-736.58	22.44	40.342463	-104.492196
BHL - RED CLOUD 9N (P3)	6495.00	-763.37	-9636.63	40.342384	-104.526846
SHL - RED CLOUD 9N	0.00	0.00	0.00	40.344485	-104.492276

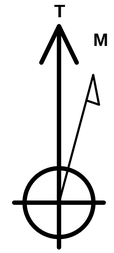


PROPOSED LOCAL COORDINATES:

SHL: 1528ft FNL & 764ft FEL of Sec 1

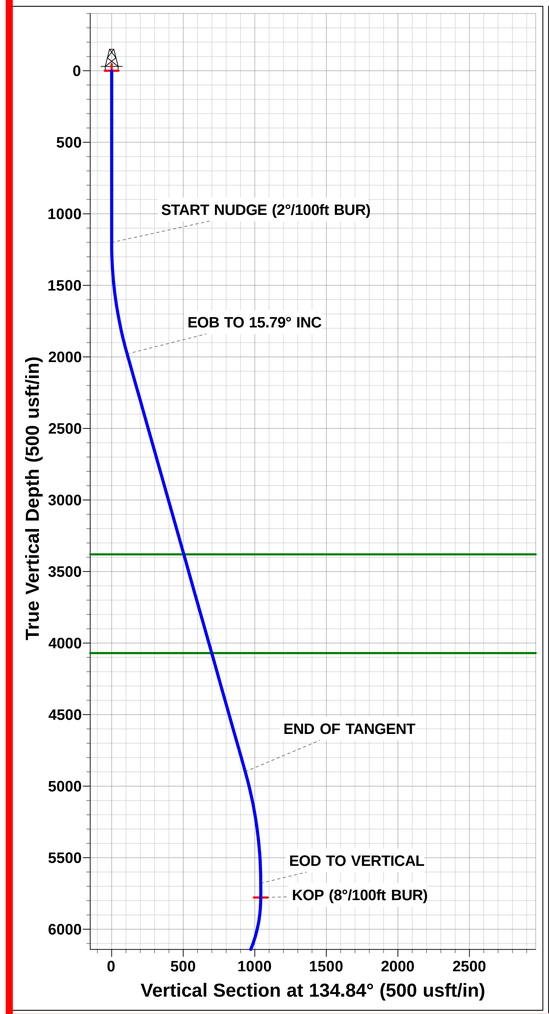
EP: 2265ft FNL & 737ft FEL of Sec 1

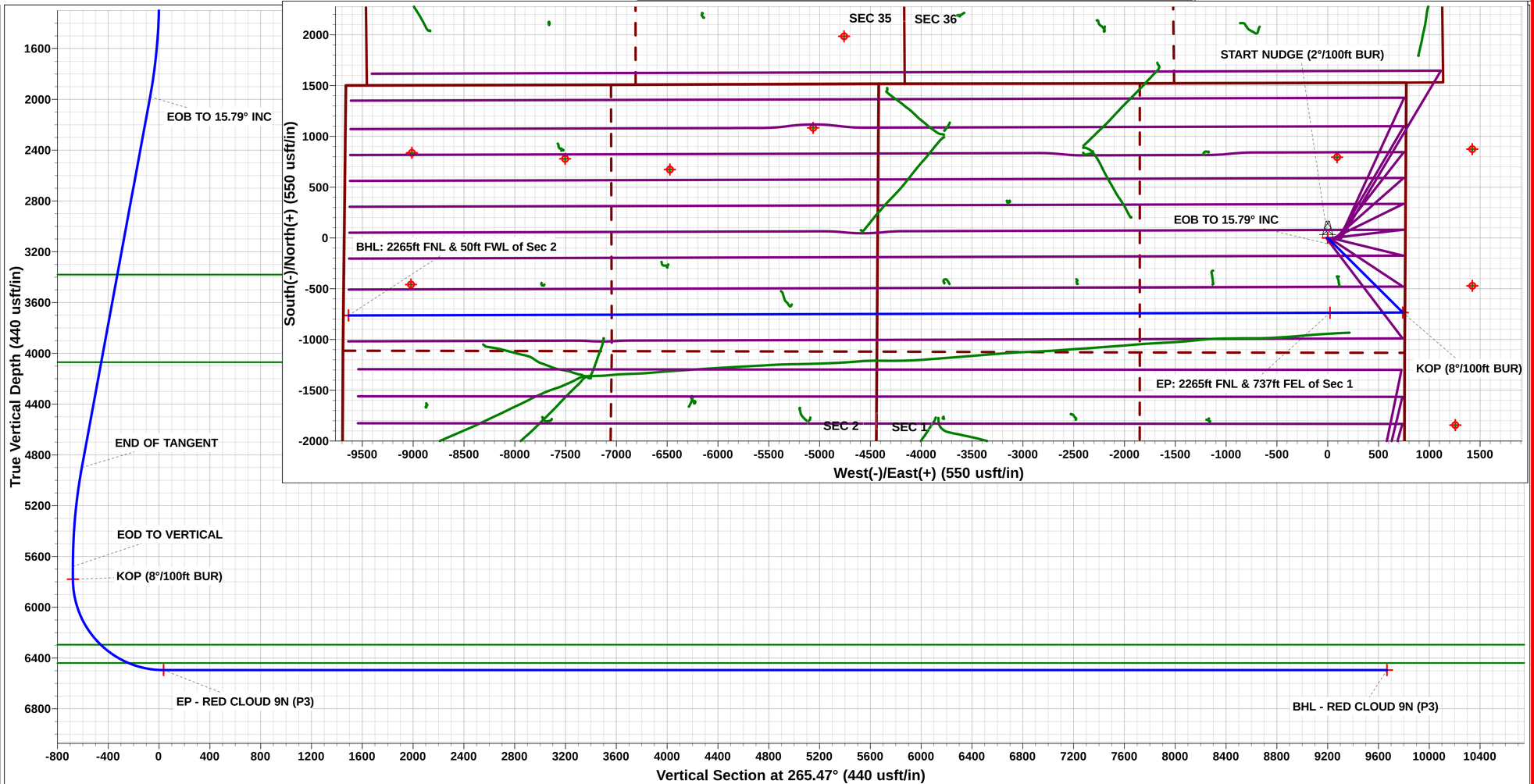
BHL: 2265ft FNL & 50ft FWL of Sec 2



Azimuths to True North
Magnetic North: 7.94°

Magnetic Field
Strength: 52267.3snT
Dip Angle: 66.82°
Date: 26/07/2018
Model: IGRF2015





PDC ENERGY

WELD COUNTY, COLORADO (TRUE)
SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)
RED CLOUD 9N

ORIGINAL WELLBORE
PROPOSAL #3

Anticollision Report

13 August, 2018

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well RED CLOUD 9N
Project:	WELD COUNTY, COLORADO (TRUE)	**TVD Reference:**	KB-EST @ 4625.00usft (Original Well Elev)
Reference Site:	SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)	**MD Reference:**	KB-EST @ 4625.00usft (Original Well Elev)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	RED CLOUD 9N	**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** 13/08/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	16,697.28	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
SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)						
EXIST HZ SOONER STATE B #36-63HN - Wellbore #1 -	1,207.53	1,208.00	2,002.88	1,998.37	444.223	CC, ES
EXIST HZ SOONER STATE B #36-63HN - Wellbore #1 -	11,900.00	11,055.00	3,473.93	3,196.02	12.500	SF
EXIST VERT ROTHE #4-6 - Wellbore #1 - Design #1	3,033.63	2,967.29	1,622.91	1,553.57	23.402	CC
EXIST VERT ROTHE #4-6 - Wellbore #1 - Design #1	3,600.00	3,512.29	1,630.21	1,546.77	19.537	ES
EXIST VERT ROTHE #4-6 - Wellbore #1 - Design #1	6,100.00	5,946.52	1,757.75	1,616.75	12.466	SF
EXIST VERT ROTHE #5-6 - Wellbore #1 - Design #1	5,913.17	5,761.80	733.55	601.96	5.575	CC
EXIST VERT ROTHE #5-6 - Wellbore #1 - Design #1	5,950.00	5,798.61	734.43	595.93	5.303	ES, SF
RED CLOUD 0N - ORIGINAL WELLBORE - PROPOSAL	300.00	300.00	134.95	133.88	125.869	CC, ES
RED CLOUD 0N - ORIGINAL WELLBORE - PROPOSAL	16,697.28	17,188.44	2,393.01	1,823.46	4.202	SF
RED CLOUD 10N - ORIGINAL WELLBORE - PROPOSA	1,200.00	1,200.00	15.00	9.88	2.930	CC
RED CLOUD 10N - ORIGINAL WELLBORE - PROPOSA	16,697.28	16,828.08	264.37	-284.46	0.482	Level 1, ES, SF
RED CLOUD 1N - ORIGINAL WELLBORE - PROPOSAL	400.00	400.00	119.98	118.46	78.847	CC, ES
RED CLOUD 1N - ORIGINAL WELLBORE - PROPOSAL	16,697.28	16,824.82	2,114.85	1,547.23	3.726	SF
RED CLOUD 2N - ORIGINAL WELLBORE - PROPOSAL	500.00	500.00	104.98	103.01	53.259	CC, ES
RED CLOUD 2N - ORIGINAL WELLBORE - PROPOSAL	16,697.28	16,810.73	1,836.50	1,269.50	3.239	SF
RED CLOUD 3N - ORIGINAL WELLBORE - PROPOSAL	600.00	600.00	89.98	87.56	37.172	CC, ES
RED CLOUD 3N - ORIGINAL WELLBORE - PROPOSAL	16,697.28	16,688.00	1,579.77	1,012.15	2.783	SF
RED CLOUD 4N - ORIGINAL WELLBORE - PROPOSAL	700.00	700.00	74.99	72.12	26.125	CC, ES
RED CLOUD 4N - ORIGINAL WELLBORE - PROPOSAL	16,697.28	16,726.85	1,327.22	760.47	2.342	SF
RED CLOUD 5N - ORIGINAL WELLBORE - PROPOSAL	800.00	800.00	59.99	56.67	18.070	CC, ES
RED CLOUD 5N - ORIGINAL WELLBORE - PROPOSAL	16,697.28	16,639.13	1,069.86	501.86	1.884	SF
RED CLOUD 6N - ORIGINAL WELLBORE - PROPOSAL	900.00	900.00	44.99	41.22	11.936	CC, ES
RED CLOUD 6N - ORIGINAL WELLBORE - PROPOSAL	16,697.28	16,710.29	818.81	253.16	1.448	Level 3, SF
RED CLOUD 7N - ORIGINAL WELLBORE - PROPOSAL	1,000.00	1,000.00	29.99	25.78	7.110	CC
RED CLOUD 7N - ORIGINAL WELLBORE - PROPOSAL	16,697.28	16,633.16	559.90	-8.28	0.985	Level 1, ES, SF
RED CLOUD 8N - ORIGINAL WELLBORE - PROPOSAL	1,100.00	1,100.00	15.00	10.33	3.213	CC
RED CLOUD 8N - ORIGINAL WELLBORE - PROPOSAL	16,697.28	16,719.76	264.39	-285.09	0.481	Level 1, ES, SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well RED CLOUD 9N
Project:	WELD COUNTY, COLORADO (TRUE)	**TVD Reference:**	KB-EST @ 4625.00usft (Original Well Elev)
Reference Site:	SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)	**MD Reference:**	KB-EST @ 4625.00usft (Original Well Elev)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	RED CLOUD 9N	**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
SE NE SEC. 36 T5N R64W 6th P.M. (PYRAMID)						
ABDN VERT ROTHE STATE B #36-15 - Wellbore #1 - W	1,241.29	1,233.67	2,276.49	2,273.20	692.126	CC, ES
ABDN VERT ROTHE STATE B #36-15 - Wellbore #1 - W	14,000.00	6,153.42	6,863.33	6,654.35	32.842	SF
ABDN VERT ROTHE STATE B #36-16 - Wellbore #1 - W	1,259.28	1,253.34	2,377.40	2,373.99	696.197	CC, ES
ABDN VERT ROTHE STATE B #36-16 - Wellbore #1 - W	16,200.00	6,100.00	9,998.59	9,728.41	37.007	SF
EXIST DD ECKHARDT B #35-13 - Wellbore #1 - Wellbor	15,885.57	6,617.68	2,802.71	2,538.70	10.616	CC
EXIST DD ECKHARDT B #35-13 - Wellbore #1 - Wellbor	16,000.00	6,616.75	2,805.05	2,537.83	10.497	ES
EXIST DD ECKHARDT B #35-13 - Wellbore #1 - Wellbor	16,697.28	6,610.92	2,917.88	2,631.10	10.175	SF
EXIST VERT BAKER STATE B #36-13 - Wellbore #1 - W	10,639.97	6,381.82	2,957.78	2,841.52	25.441	CC
EXIST VERT BAKER STATE B #36-13 - Wellbore #1 - W	10,700.00	6,379.61	2,958.39	2,840.47	25.088	ES
EXIST VERT BAKER STATE B #36-13 - Wellbore #1 - W	12,700.00	6,314.31	3,603.67	3,430.22	20.777	SF
EXIST VERT BAKER STATE B #36-14 - Wellbore #1 - W	9,248.56	6,354.80	2,816.49	2,738.50	36.110	CC
EXIST VERT BAKER STATE B #36-14 - Wellbore #1 - W	9,300.00	6,354.36	2,816.96	2,737.57	35.480	ES
EXIST VERT BAKER STATE B #36-14 - Wellbore #1 - W	12,100.00	6,335.25	4,007.85	3,851.04	25.559	SF
EXIST VERT HOSHIKO #2 - Wellbore #1 - Wellbore #1	13,205.39	6,538.56	2,967.18	2,779.12	15.778	CC
EXIST VERT HOSHIKO #2 - Wellbore #1 - Wellbore #1	13,300.00	6,538.74	2,968.68	2,777.98	15.567	ES
EXIST VERT HOSHIKO #2 - Wellbore #1 - Wellbore #1	14,500.00	6,541.22	3,237.30	3,013.01	14.433	SF
EXIST VERT HOSHIKO #35-16H4 - Wellbore #1 - Desig	11,811.96	6,505.02	2,734.13	2,458.64	9.925	CC
EXIST VERT HOSHIKO #35-16H4 - Wellbore #1 - Desig	11,900.00	6,505.02	2,735.55	2,457.60	9.842	ES
EXIST VERT HOSHIKO #35-16H4 - Wellbore #1 - Desig	12,600.00	6,505.02	2,845.43	2,547.95	9.565	SF
EXIST VERT HOSHIKO B #35-14 - Wellbore #1 - Wellbo	14,716.39	6,496.40	2,881.47	2,651.36	12.522	CC
EXIST VERT HOSHIKO B #35-14 - Wellbore #1 - Wellbo	14,800.00	6,495.78	2,882.69	2,650.23	12.401	ES
EXIST VERT HOSHIKO B #35-14 - Wellbore #1 - Wellbo	15,700.00	6,488.97	3,044.72	2,787.04	11.816	SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well RED CLOUD 9N
Project:	WELD COUNTY, COLORADO (TRUE)	**TVD Reference:**	KB-EST @ 4625.00usft (Original Well Elev)
Reference Site:	SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)	**MD Reference:**	KB-EST @ 4625.00usft (Original Well Elev)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	RED CLOUD 9N	**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
SE SE SEC. 1 T4N R64W 6th P.M. (LINDSEY)						
ABDN DD MERCER C #11-30D - Wellbore #1 - Wellbore	16,697.28	6,501.18	3,083.84	2,797.60	10.774	CC, ES, SF
ABDN VERT BOOY HILLS FARM #2-12 - Wellbore #1 -	15,932.57	6,528.72	870.38	606.31	3.296	CC, ES
ABDN VERT BOOY HILLS FARM #2-12 - Wellbore #1 -	16,000.00	6,529.91	872.99	607.04	3.283	SF
ABDN VERT FHA #10-1 - Wellbore #1 - Wellbore #1	8,255.90	6,487.55	1,050.41	998.87	20.382	CC
ABDN VERT FHA #10-1 - Wellbore #1 - Wellbore #1	8,300.00	6,488.17	1,051.34	998.66	19.958	ES
ABDN VERT FHA #10-1 - Wellbore #1 - Wellbore #1	8,800.00	6,495.03	1,182.94	1,117.04	17.949	SF
ABDN VERT FHA #15-1 - Wellbore #1 - Wellbore #1	8,202.84	6,419.55	2,353.83	2,303.64	46.905	CC
ABDN VERT FHA #15-1 - Wellbore #1 - Wellbore #1	8,300.00	6,417.88	2,355.83	2,303.13	44.703	ES
ABDN VERT FHA #15-1 - Wellbore #1 - Wellbore #1	11,400.00	6,372.49	3,969.85	3,832.48	28.899	SF
ABDN VERT HOSHIKO C #2-8 - Wellbore #1 - Wellbore	12,433.58	6,481.44	221.35	54.88	1.330	Level 3, CC, ES, SF
ABDN VERT SAND CREEK RANCH C #2-3X - Wellbore	14,630.56	6,456.34	1,682.93	1,455.07	7.386	CC
ABDN VERT SAND CREEK RANCH C #2-3X - Wellbore	14,700.00	6,457.33	1,684.36	1,454.55	7.329	ES
ABDN VERT SAND CREEK RANCH C #2-3X - Wellbore	15,000.00	6,461.61	1,722.99	1,484.76	7.232	SF
ABDN VERT SAND CREEK RANCH CO #2-3 - Wellbore	14,561.14	6,501.02	1,536.56	1,184.24	4.361	CC
ABDN VERT SAND CREEK RANCH CO #2-3 - Wellbore	14,600.00	6,501.02	1,537.05	1,183.65	4.349	ES
ABDN VERT SAND CREEK RANCH CO #2-3 - Wellbore	14,700.00	6,501.02	1,542.82	1,186.61	4.331	SF
ABDN VERT SHAKLEE #1 - Wellbore #1 - Wellbore #1	16,166.34	6,495.68	2,304.19	2,033.39	8.509	CC
ABDN VERT SHAKLEE #1 - Wellbore #1 - Wellbore #1	16,200.00	6,495.79	2,304.44	2,032.70	8.480	ES
ABDN VERT SHAKLEE #1 - Wellbore #1 - Wellbore #1	16,697.28	6,497.50	2,364.57	2,078.88	8.277	SF
ABDN VERT SHAKLEE #2 - Wellbore #1 - Wellbore #1	14,830.34	6,492.63	2,275.79	2,042.40	9.751	CC
ABDN VERT SHAKLEE #2 - Wellbore #1 - Wellbore #1	14,900.00	6,494.96	2,276.85	2,041.51	9.675	ES
ABDN VERT SHAKLEE #2 - Wellbore #1 - Wellbore #1	15,500.00	6,514.55	2,372.16	2,120.02	9.408	SF
ABDN VERT SHAKLEE #3 - Wellbore #1 - Wellbore #1	14,793.58	6,504.71	1,007.26	774.98	4.337	CC
ABDN VERT SHAKLEE #3 - Wellbore #1 - Wellbore #1	14,800.00	6,504.70	1,007.28	774.82	4.333	ES
ABDN VERT SHAKLEE #3 - Wellbore #1 - Wellbore #1	14,900.00	6,504.50	1,012.86	777.61	4.305	SF
EXIST DD HOFFMAN C #2-20D - Wellbore #1 - Wellbore	15,367.78	6,629.91	293.71	24.74	1.092	Level 2, CC, ES, SF
EXIST DD HOFFMAN C #2-25D - Wellbore #1 - Wellbore	15,439.66	6,787.16	1,700.62	1,427.04	6.216	CC
EXIST DD HOFFMAN C #2-25D - Wellbore #1 - Wellbore	15,500.00	6,787.21	1,701.69	1,426.42	6.182	ES
EXIST DD HOFFMAN C #2-25D - Wellbore #1 - Wellbore	15,700.00	6,787.38	1,720.43	1,439.55	6.125	SF
EXIST DD HOFFMAN C #2-33D - Wellbore #1 - Wellbore	16,697.28	7,279.96	1,711.07	1,373.53	5.069	CC, ES, SF
EXIST DD HOFFMAN C 2-21D - Wellbore #1 - Wellbore	14,188.10	6,533.24	231.69	4.75	1.021	Level 2, CC
EXIST DD HOFFMAN C 2-21D - Wellbore #1 - Wellbore	14,200.00	6,533.34	231.99	4.72	1.021	Level 2, ES, SF
EXIST DD MARLEY C #1-18D - Wellbore #1 - Wellbore #	8,990.72	6,594.04	943.48	858.05	11.044	CC
EXIST DD MARLEY C #1-18D - Wellbore #1 - Wellbore #	9,000.00	6,594.07	943.53	857.85	11.013	ES
EXIST DD MARLEY C #1-18D - Wellbore #1 - Wellbore #	9,300.00	6,594.88	992.88	899.06	10.582	SF
EXIST DD MARLEY C #1-24D - Wellbore #1 - Wellbore #	8,805.62	7,000.72	1,767.84	1,659.05	16.250	CC
EXIST DD MARLEY C #1-24D - Wellbore #1 - Wellbore #	8,900.00	7,000.00	1,770.36	1,659.03	15.902	ES
EXIST DD MARLEY C #1-24D - Wellbore #1 - Wellbore #	9,600.00	6,992.15	1,938.10	1,807.73	14.866	SF
EXIST DD MARLEY C #1-28D - Wellbore #1 - Wellbore #	8,724.10	6,552.30	2,447.71	2,366.38	30.098	CC
EXIST DD MARLEY C #1-28D - Wellbore #1 - Wellbore #	8,800.00	6,558.56	2,448.87	2,365.50	29.374	ES
EXIST DD MARLEY C #1-28D - Wellbore #1 - Wellbore #	10,800.00	6,581.00	3,209.12	3,070.86	23.211	SF
EXIST DD MARLEY C #1-30D - Wellbore #1 - Wellbore #	11,389.20	6,542.70	2,221.78	2,069.57	14.596	CC
EXIST DD MARLEY C #1-30D - Wellbore #1 - Wellbore #	11,500.00	6,552.00	2,224.56	2,069.24	14.322	ES
EXIST DD MARLEY C #1-30D - Wellbore #1 - Wellbore #	12,300.00	6,552.00	2,401.19	2,223.56	13.518	SF
EXIST DD MARLEY C #1-31D - Wellbore #1 - Wellbore #	11,648.43	6,695.07	824.65	661.17	5.044	CC, ES
EXIST DD MARLEY C #1-31D - Wellbore #1 - Wellbore #	11,800.00	6,696.94	838.46	670.74	4.999	SF
EXIST DD MARLEY C #1-33D - Wellbore #1 - Wellbore #	11,355.29	6,598.45	1,666.96	1,516.39	11.071	CC
EXIST DD MARLEY C #1-33D - Wellbore #1 - Wellbore #	11,400.00	6,598.38	1,667.56	1,515.75	10.984	ES
EXIST DD MARLEY C #1-33D - Wellbore #1 - Wellbore #	11,900.00	6,597.57	1,753.70	1,587.96	10.581	SF
EXIST DD PANTHER C #11-27D - Wellbore #1 - Wellbor	12,852.29	6,624.40	2,964.79	2,772.22	15.396	CC
EXIST DD PANTHER C #11-27D - Wellbore #1 - Wellbor	12,900.00	6,624.21	2,965.18	2,771.28	15.292	ES
EXIST DD PANTHER C #11-27D - Wellbore #1 - Wellbor	14,100.00	6,619.03	3,216.64	2,989.16	14.141	SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well RED CLOUD 9N
Project:	WELD COUNTY, COLORADO (TRUE)	**TVD Reference:**	KB-EST @ 4625.00usft (Original Well Elev)
Reference Site:	SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)	**MD Reference:**	KB-EST @ 4625.00usft (Original Well Elev)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	RED CLOUD 9N	**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
SE SE SEC. 1 T4N R64W 6th P.M. (LINDSEY)						
EXIST DD PANTHER C #11-28D - Wellbore #1 - Wellbor	14,210.15	7,023.25	2,943.14	2,688.62	11.564	CC
EXIST DD PANTHER C #11-28D - Wellbore #1 - Wellbor	14,300.00	7,022.30	2,944.51	2,687.48	11.456	ES
EXIST DD PANTHER C #11-28D - Wellbore #1 - Wellbor	15,200.00	7,013.01	3,105.12	2,822.87	11.001	SF
EXIST DD PANTHER C #2-23D - Wellbore #1 - Wellbore	12,825.74	6,634.94	1,673.74	1,481.73	8.717	CC
EXIST DD PANTHER C #2-23D - Wellbore #1 - Wellbore	12,900.00	6,634.14	1,675.38	1,481.30	8.632	ES
EXIST DD PANTHER C #2-23D - Wellbore #1 - Wellbore	13,200.00	6,630.93	1,715.06	1,512.59	8.471	SF
EXIST HZ BOBCAT C #12-69HN - Wellbore #1 - Wellbor	7,376.38	11,078.00	2,870.91	2,707.95	17.618	CC
EXIST HZ BOBCAT C #12-69HN - Wellbore #1 - Wellbor	7,400.00	11,078.00	2,870.91	2,707.47	17.566	ES
EXIST HZ BOBCAT C #12-69HN - Wellbore #1 - Wellbor	13,600.00	6,043.00	3,281.55	3,074.53	15.852	SF
EXIST HZ HOFFMAN C #02-65HN - Wellbore #1 - Wellb	6,849.67	13,691.00	198.22	-27.78	0.877	Level 1, CC
EXIST HZ HOFFMAN C #02-65HN - Wellbore #1 - Wellb	6,850.00	13,691.00	198.22	-27.78	0.877	Level 1, ES, SF
EXIST HZ TOBY C #12-79HN - Wellbore #1 - Wellbore #	11,431.50	6,084.53	3,079.98	2,925.24	19.905	CC
EXIST HZ TOBY C #12-79HN - Wellbore #1 - Wellbore #	11,500.00	6,084.31	3,080.74	2,924.13	19.671	ES
EXIST HZ TOBY C #12-79HN - Wellbore #1 - Wellbore #	13,100.00	6,079.09	3,502.87	3,302.43	17.476	SF
EXIST VERT AMIGO #1 - Wellbore #1 - Wellbore #1	10,781.68	6,350.00	318.43	205.93	2.830	CC, ES
EXIST VERT AMIGO #1 - Wellbore #1 - Wellbore #1	10,800.00	6,350.00	318.95	205.98	2.823	SF
EXIST VERT AMIGO #2 - Wellbore #1 - Wellbore #1	9,530.65	6,465.34	334.20	248.09	3.881	CC, ES
EXIST VERT AMIGO #2 - Wellbore #1 - Wellbore #1	9,600.00	6,466.25	341.32	253.31	3.878	SF
EXIST VERT AMIGO FARMS #1-12 - Wellbore #1 - Well	10,843.25	6,492.40	1,012.49	890.57	8.305	CC, ES
EXIST VERT AMIGO FARMS #1-12 - Wellbore #1 - Well	11,100.00	6,492.23	1,044.54	915.49	8.094	SF
EXIST VERT FEIT #1 - Wellbore #1 - Wellbore #1	9,371.16	6,434.01	1,591.99	1,510.65	19.574	CC
EXIST VERT FEIT #1 - Wellbore #1 - Wellbore #1	9,400.00	6,433.25	1,592.25	1,510.13	19.390	ES
EXIST VERT FEIT #1 - Wellbore #1 - Wellbore #1	10,200.00	6,413.40	1,794.70	1,690.65	17.248	SF
EXIST VERT FEIT #1-4 - Wellbore #1 - Wellbore #1	10,775.25	6,350.00	1,886.19	1,766.13	15.711	CC
EXIST VERT FEIT #1-4 - Wellbore #1 - Wellbore #1	10,800.00	6,350.00	1,886.35	1,765.61	15.623	ES
EXIST VERT FEIT #1-4 - Wellbore #1 - Wellbore #1	11,600.00	6,350.00	2,058.62	1,915.67	14.401	SF
EXIST VERT FHA #2-1 - Wellbore #1 - Wellbore #1	14,796.37	6,501.39	312.52	80.13	1.345	Level 3, CC
EXIST VERT FHA #2-1 - Wellbore #1 - Wellbore #1	14,800.00	6,501.40	312.54	80.05	1.344	Level 3, ES, SF
EXIST VERT FOOS #1-16I4 - Wellbore #1 - Wellbore #1	7,366.53	6,542.45	1,996.81	1,966.71	66.338	CC
EXIST VERT FOOS #1-16I4 - Wellbore #1 - Wellbore #1	7,400.00	6,545.14	1,997.09	1,966.31	64.873	ES
EXIST VERT FOOS #1-16I4 - Wellbore #1 - Wellbore #1	11,600.00	6,745.00	4,673.90	4,531.92	32.919	SF
EXIST VERT FUEGO C #1-19 - Wellbore #1 - Wellbore #	10,191.22	6,448.23	1,101.45	997.51	10.596	CC
EXIST VERT FUEGO C #1-19 - Wellbore #1 - Wellbore #	10,200.00	6,448.38	1,101.49	997.30	10.572	ES
EXIST VERT FUEGO C #1-19 - Wellbore #1 - Wellbore #	10,500.00	6,453.67	1,143.90	1,031.40	10.168	SF
EXIST VERT HAPPY AMIGO C #1-25 - Wellbore #1 - W	10,202.01	6,508.42	1,972.57	1,868.06	18.875	CC
EXIST VERT HAPPY AMIGO C #1-25 - Wellbore #1 - W	10,300.00	6,507.68	1,975.00	1,867.79	18.421	ES
EXIST VERT HAPPY AMIGO C #1-25 - Wellbore #1 - W	11,200.00	6,501.15	2,210.65	2,078.46	16.724	SF
EXIST VERT HAPPY TALK #1 - Wellbore #1 - Wellbore	9,590.83	6,476.45	989.80	902.00	11.274	CC
EXIST VERT HAPPY TALK #1 - Wellbore #1 - Wellbore	9,600.00	6,476.41	989.84	901.79	11.242	ES
EXIST VERT HAPPY TALK #1 - Wellbore #1 - Wellbore	9,900.00	6,474.90	1,036.96	940.67	10.769	SF
EXIST VERT HAPPY TALK #2 - Wellbore #1 - Wellbore	9,544.85	6,520.53	2,280.75	2,194.67	26.496	CC
EXIST VERT HAPPY TALK #2 - Wellbore #1 - Wellbore	9,600.00	6,520.33	2,281.42	2,193.83	26.047	ES
EXIST VERT HAPPY TALK #2 - Wellbore #1 - Wellbore	11,200.00	6,514.20	2,818.03	2,686.20	21.376	SF
EXIST VERT HOFFMAN C #11-29 - Wellbore #1 - Wellb	15,513.42	6,559.68	2,726.49	2,473.84	10.791	CC
EXIST VERT HOFFMAN C #11-29 - Wellbore #1 - Wellb	15,600.00	6,561.32	2,727.87	2,472.79	10.694	ES
EXIST VERT HOFFMAN C #11-29 - Wellbore #1 - Wellb	16,300.00	6,575.72	2,837.65	2,562.98	10.331	SF
EXIST VERT HOSHIKO #1-2 - Wellbore #1 - Design #1	12,119.29	6,493.02	1,834.11	1,550.16	6.459	CC
EXIST VERT HOSHIKO #1-2 - Wellbore #1 - Design #1	12,200.00	6,493.02	1,835.88	1,549.69	6.415	ES
EXIST VERT HOSHIKO #1-2 - Wellbore #1 - Design #1	12,500.00	6,493.02	1,873.20	1,578.63	6.359	SF
EXIST VERT HOSHIKO #2-2 - Wellbore #1 - Design #1	13,530.11	6,517.02	1,427.77	1,104.16	4.412	CC
EXIST VERT HOSHIKO #2-2 - Wellbore #1 - Design #1	13,600.00	6,517.02	1,429.48	1,103.91	4.391	ES
EXIST VERT HOSHIKO #2-2 - Wellbore #1 - Design #1	13,700.00	6,517.02	1,437.84	1,109.47	4.379	SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well RED CLOUD 9N
Project:	WELD COUNTY, COLORADO (TRUE)	**TVD Reference:**	KB-EST @ 4625.00usft (Original Well Elev)
Reference Site:	SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)	**MD Reference:**	KB-EST @ 4625.00usft (Original Well Elev)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	RED CLOUD 9N	**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
SE SE SEC. 1 T4N R64W 6th P.M. (LINDSEY)						
EXIST VERT HOSHIKO #7-2 - Wellbore #1 - Wellbore #1	13,614.87	6,475.47	516.55	317.28	2.592	CC, ES, SF
EXIST VERT MCDERMED #1-1 - Wellbore #1 - Design #	1,200.00	1,186.00	800.45	776.44	33.341	CC
EXIST VERT MCDERMED #1-1 - Wellbore #1 - Design #	1,300.00	1,285.98	801.53	775.31	30.573	ES
EXIST VERT MCDERMED #1-1 - Wellbore #1 - Design #	7,300.00	6,481.00	1,567.94	1,412.82	10.108	SF
EXIST VERT MCDERMED #2-1 - Wellbore #1 - Wellbore	251.75	226.76	1,468.45	1,467.79	2,228.652	CC
EXIST VERT MCDERMED #2-1 - Wellbore #1 - Wellbore	300.00	271.87	1,468.50	1,467.70	1,834.344	ES
EXIST VERT MCDERMED #2-1 - Wellbore #1 - Wellbore	9,600.00	6,444.37	2,097.83	2,010.08	23.908	SF
EXIST VERT MCFERREN #4-2 - Wellbore #1 - Design #	16,068.96	4,629.00	2,460.77	2,220.74	10.252	CC
EXIST VERT MCFERREN #4-2 - Wellbore #1 - Design #	16,100.00	4,629.00	2,460.97	2,220.35	10.228	ES
EXIST VERT MCFERREN #4-2 - Wellbore #1 - Design #	16,600.00	4,629.00	2,517.42	2,267.25	10.063	SF
EXIST VERT MCFERREN #5-2 - Wellbore #1 - Design #	16,081.36	6,521.01	302.62	21.58	1.077	Level 2, CC, ES, SF
EXIST VERT MINOR #1 - Wellbore #1 - Wellbore #1	10,874.98	6,400.00	2,444.51	2,321.70	19.906	CC
EXIST VERT MINOR #1 - Wellbore #1 - Wellbore #1	10,900.00	6,400.00	2,444.63	2,321.14	19.795	ES
EXIST VERT MINOR #1 - Wellbore #1 - Wellbore #1	12,200.00	6,400.00	2,780.52	2,620.85	17.414	SF
EXIST VERT REIN #1 - Wellbore #1 - Wellbore #1	8,188.54	6,464.95	417.22	366.79	8.274	CC
EXIST VERT REIN #1 - Wellbore #1 - Wellbore #1	8,200.00	6,464.88	417.37	366.66	8.229	ES
EXIST VERT REIN #1 - Wellbore #1 - Wellbore #1	8,300.00	6,464.33	431.85	378.54	8.101	SF
EXIST VERT REIN #1-8 - Wellbore #1 - Wellbore #1	3,114.00	3,039.45	253.72	242.27	22.163	CC, ES
EXIST VERT REIN #1-8 - Wellbore #1 - Wellbore #1	7,038.17	6,469.19	363.45	339.18	14.974	SF
EXIST VERT ROTHE #1 - Wellbore #1 - Wellbore #1	12,257.26	6,490.57	923.37	761.99	5.722	CC
EXIST VERT ROTHE #1 - Wellbore #1 - Wellbore #1	12,300.00	6,491.36	924.36	761.79	5.686	ES
EXIST VERT ROTHE #1 - Wellbore #1 - Wellbore #1	12,400.00	6,493.23	934.34	768.98	5.650	SF
EXIST VERT ROTHE #2 - Wellbore #1 - Wellbore #1	13,490.96	6,468.50	2,315.61	2,119.76	11.824	CC
EXIST VERT ROTHE #2 - Wellbore #1 - Wellbore #1	13,600.00	6,467.87	2,318.18	2,119.28	11.655	ES
EXIST VERT ROTHE #2 - Wellbore #1 - Wellbore #1	14,300.00	6,463.81	2,452.87	2,234.38	11.226	SF
EXIST VERT ROTHE #2-10 - Wellbore #1 - Wellbore #1	13,325.53	6,249.57	893.32	707.81	4.815	CC, ES
EXIST VERT ROTHE #2-10 - Wellbore #1 - Wellbore #1	13,500.00	6,262.21	910.06	719.24	4.769	SF
EXIST VERT ROTHE #3 - Wellbore #1 - Wellbore #1	12,212.80	6,487.30	2,305.96	2,145.53	14.374	CC
EXIST VERT ROTHE #3 - Wellbore #1 - Wellbore #1	12,300.00	6,487.01	2,307.61	2,144.74	14.169	ES
EXIST VERT ROTHE #3 - Wellbore #1 - Wellbore #1	13,100.00	6,484.48	2,470.74	2,285.52	13.340	SF
EXIST VERT SPIKE STATE #CC6-12 - Wellbore #1 - De	5,913.17	5,755.80	1,222.82	1,086.63	8.978	CC, ES, SF
EXIST VERT SPIKE STATE #CC6-13 - Wellbore #1 - We	5,772.94	5,588.01	2,587.72	2,568.77	136.578	CC
EXIST VERT SPIKE STATE #CC6-13 - Wellbore #1 - We	5,813.17	5,617.33	2,588.03	2,565.18	113.272	ES
EXIST VERT SPIKE STATE #CC6-13 - Wellbore #1 - We	15,500.00	6,214.65	9,990.54	9,739.37	39.775	SF
LINDSEY 10N - ORIGINAL WELLBORE - PROPOSAL #	14,155.00	14,006.54	2,907.96	2,480.85	6.808	CC
LINDSEY 10N - ORIGINAL WELLBORE - PROPOSAL #	16,697.28	16,473.16	2,917.68	2,350.17	5.141	ES, SF
LINDSEY 1C - ORIGINAL WELLBORE - PROPOSAL #1	6,053.78	6,355.21	564.33	525.33	14.468	CC
LINDSEY 1C - ORIGINAL WELLBORE - PROPOSAL #1	16,600.00	17,057.90	599.41	93.84	1.186	Level 2, ES, SF
LINDSEY 2N - ORIGINAL WELLBORE - PROPOSAL #1	16,606.09	16,856.65	796.71	232.79	1.413	Level 3, CC, ES, SF
LINDSEY 3N - ORIGINAL WELLBORE - PROPOSAL #1	16,606.93	16,822.59	1,065.69	503.00	1.894	CC, ES
LINDSEY 3N - ORIGINAL WELLBORE - PROPOSAL #1	16,697.28	16,822.59	1,069.51	504.30	1.892	SF
LINDSEY 4N - ORIGINAL WELLBORE - PROPOSAL #1	16,610.77	16,701.63	1,324.64	760.24	2.347	CC, ES
LINDSEY 4N - ORIGINAL WELLBORE - PROPOSAL #1	16,697.28	16,701.63	1,327.47	760.65	2.342	SF
LINDSEY 5N - ORIGINAL WELLBORE - PROPOSAL #1	16,611.38	16,694.71	1,592.66	1,028.84	2.825	CC
LINDSEY 5N - ORIGINAL WELLBORE - PROPOSAL #1	16,697.28	16,694.71	1,594.98	1,028.74	2.817	ES, SF
LINDSEY 6N - ORIGINAL WELLBORE - PROPOSAL #1	16,612.17	16,594.46	1,856.39	1,291.87	3.288	CC
LINDSEY 6N - ORIGINAL WELLBORE - PROPOSAL #1	16,697.28	16,594.46	1,858.34	1,291.43	3.278	ES, SF
LINDSEY 7N - ORIGINAL WELLBORE - PROPOSAL #1	16,615.40	16,630.53	2,123.90	1,559.36	3.762	CC
LINDSEY 7N - ORIGINAL WELLBORE - PROPOSAL #1	16,697.28	16,630.53	2,125.46	1,558.62	3.750	ES, SF
LINDSEY 8N - ORIGINAL WELLBORE - PROPOSAL #1	16,616.60	16,558.58	2,384.55	1,819.27	4.218	CC
LINDSEY 8N - ORIGINAL WELLBORE - PROPOSAL #1	16,697.28	16,558.58	2,385.91	1,818.37	4.204	ES, SF
LINDSEY 9N - ORIGINAL WELLBORE - PROPOSAL #1	16,619.50	16,608.36	2,651.76	2,086.31	4.690	CC

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well RED CLOUD 9N
Project:	WELD COUNTY, COLORADO (TRUE)	**TVD Reference:**	KB-EST @ 4625.00usft (Original Well Elev)
Reference Site:	SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)	**MD Reference:**	KB-EST @ 4625.00usft (Original Well Elev)
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	RED CLOUD 9N	**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
SE SE SEC. 1 T4N R64W 6th P.M. (LINDSEY)						
LINDSEY 9N - ORIGINAL WELLBORE - PROPOSAL #1	16,697.28	16,608.36	2,652.87	2,085.25	4.674	ES, SF

Offset Design SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD) - EXIST HZ SOONER STATE B #36-63HN - Wellbo

Survey Program: 572-MWD

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	26.55	1,794.38	896.48	2,005.86				
100.00	100.00	99.00	99.00	0.09	0.11	26.55	1,794.38	896.48	2,005.86	2,005.67	0.19	N/A	
200.00	200.00	199.00	199.00	0.31	0.22	26.55	1,794.38	896.48	2,005.86	2,005.34	0.53	3,810.952	
300.00	300.00	299.00	299.00	0.54	0.32	26.55	1,794.38	896.48	2,005.86	2,005.00	0.86	2,334.656	
400.00	400.00	399.00	399.00	0.76	0.43	26.55	1,794.38	896.48	2,005.86	2,004.67	1.19	1,682.778	
500.00	500.00	499.00	499.00	0.99	0.54	26.55	1,794.38	896.48	2,005.86	2,004.34	1.52	1,315.474	
600.00	600.00	599.81	599.81	1.21	0.68	26.55	1,794.40	896.43	2,005.86	2,003.97	1.89	1,062.091	
700.00	700.00	704.24	704.23	1.44	0.89	26.52	1,794.63	895.65	2,005.72	2,003.39	2.33	861.682	
800.00	800.00	809.64	809.63	1.66	1.10	26.50	1,794.62	894.73	2,005.33	2,002.56	2.76	726.299	
900.00	900.00	907.78	907.77	1.88	1.30	26.48	1,794.50	893.84	2,004.80	2,001.62	3.19	629.132	
1,000.00	1,000.00	1,010.53	1,010.51	2.11	1.52	26.45	1,794.46	892.80	2,004.33	2,000.70	3.63	552.711	
1,100.00	1,100.00	1,114.80	1,114.78	2.33	1.74	26.43	1,794.24	891.66	2,003.65	1,999.58	4.07	492.315	
1,200.00	1,200.00	1,208.00	1,207.97	2.56	1.94	26.40	1,794.06	890.41	2,002.89	1,998.40	4.49	445.946	
1,207.53	1,207.53	1,208.00	1,207.97	2.57	1.94	-108.45	1,794.06	890.41	2,002.88	1,998.37	4.51	444.223	CC, ES
1,300.00	1,299.98	1,254.44	1,254.40	2.76	2.04	-108.45	1,794.58	890.15	2,004.27	1,999.47	4.79	418.024	
1,400.00	1,399.84	1,300.00	1,299.93	2.95	2.13	-108.42	1,796.13	890.79	2,009.55	2,004.47	5.08	395.696	
1,500.00	1,499.45	1,340.36	1,340.20	3.14	2.22	-108.35	1,798.52	891.86	2,018.75	2,013.38	5.37	376.029	
1,600.00	1,598.70	1,392.00	1,391.60	3.37	2.34	-108.28	1,803.17	893.61	2,031.94	2,026.23	5.71	356.058	
1,700.00	1,697.47	1,459.63	1,458.77	3.62	2.49	-108.30	1,810.72	895.75	2,048.25	2,042.14	6.11	335.257	
1,800.00	1,795.62	1,518.12	1,516.80	3.91	2.63	-108.29	1,817.93	897.14	2,066.81	2,060.28	6.53	316.607	
1,900.00	1,893.06	1,577.00	1,574.99	4.25	2.78	-108.28	1,826.71	899.08	2,088.96	2,081.96	6.99	298.641	
1,989.39	1,979.44	1,607.74	1,605.26	4.61	2.87	-108.08	1,831.90	900.32	2,111.54	2,104.13	7.41	284.871	
2,000.00	1,989.65	1,613.15	1,610.58	4.66	2.88	-108.12	1,832.85	900.55	2,114.40	2,106.93	7.47	283.099	
2,100.00	2,085.88	1,669.00	1,665.39	5.10	3.05	-108.58	1,843.28	903.03	2,142.54	2,134.51	8.03	266.944	
2,200.00	2,182.10	1,709.19	1,704.66	5.58	3.18	-108.91	1,851.56	905.05	2,172.86	2,164.29	8.57	253.437	
2,300.00	2,278.33	1,761.00	1,755.05	6.07	3.36	-109.33	1,863.26	908.04	2,205.50	2,196.34	9.16	240.683	
2,400.00	2,374.56	1,844.85	1,836.37	6.58	3.67	-110.00	1,883.14	912.76	2,239.52	2,229.69	9.83	227.732	
2,500.00	2,470.79	1,897.01	1,886.89	7.10	3.87	-110.42	1,895.81	915.51	2,274.37	2,263.93	10.44	217.776	
2,600.00	2,567.01	1,946.00	1,934.10	7.63	4.07	-110.81	1,908.57	918.48	2,311.20	2,300.15	11.05	209.107	
2,700.00	2,663.24	2,012.26	1,997.70	8.16	4.38	-111.32	1,926.68	922.61	2,349.56	2,337.84	11.71	200.566	
2,800.00	2,759.47	2,194.75	2,173.61	8.71	5.16	-112.72	1,974.29	931.68	2,386.78	2,374.18	12.60	189.416	
2,900.00	2,855.70	2,292.99	2,268.89	9.26	5.57	-113.42	1,997.74	936.47	2,422.33	2,409.02	13.31	181.998	
3,000.00	2,951.92	2,360.81	2,334.64	9.81	5.87	-113.90	2,014.08	939.55	2,458.35	2,444.38	13.97	176.005	
3,100.00	3,048.15	2,423.00	2,394.71	10.37	6.16	-114.32	2,029.71	943.42	2,495.84	2,481.22	14.62	170.725	
3,200.00	3,144.38	2,468.97	2,438.94	10.93	6.39	-114.61	2,041.81	946.63	2,534.78	2,519.54	15.24	166.306	
3,300.00	3,240.61	2,524.51	2,492.19	11.49	6.67	-114.97	2,057.20	950.29	2,575.19	2,559.30	15.89	162.113	
3,400.00	3,336.83	2,606.39	2,570.50	12.06	7.10	-115.51	2,080.58	955.13	2,616.45	2,599.86	16.59	157.727	
3,500.00	3,433.06	2,684.29	2,644.95	12.62	7.51	-116.02	2,103.17	959.20	2,658.19	2,640.91	17.28	153.823	
3,600.00	3,529.29	2,775.46	2,732.01	13.19	8.00	-116.61	2,129.88	963.62	2,700.34	2,682.34	18.00	150.033	
3,700.00	3,625.52	2,873.27	2,825.50	13.76	8.52	-117.23	2,158.30	967.86	2,742.42	2,723.69	18.72	146.460	
3,800.00	3,721.75	2,971.74	2,919.72	14.33	9.03	-117.84	2,186.62	971.74	2,784.37	2,764.93	19.44	143.214	

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