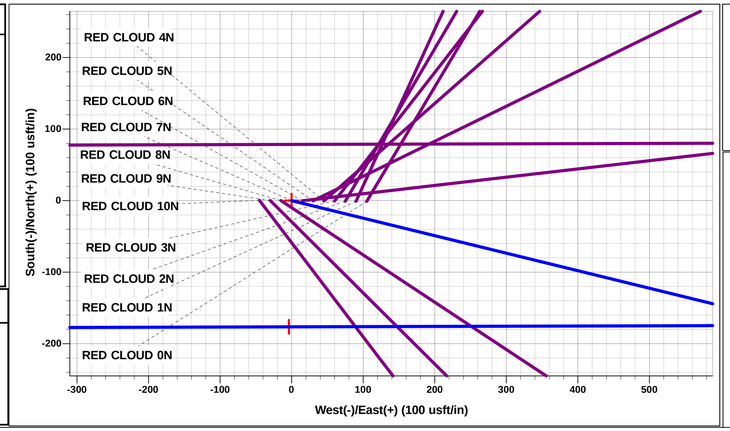
Project: WELD COUNTY, COLORADO (TRUE)
Site: SE NE SEC. 1 T4N R64W 6th P.M. (RED CLOUD)
Well: RED CLOUD 7N
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #2

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: 1529ft FNL & 734ft FEL of Sec 1
1000.00	1000.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)
1595.62	1600.00	12.00	103.76	-14.89	60.81	-60.48	62.60	EOB TO 12° INC
4456.75	4525.05	12.00	103.76	-159.50	651.51	-648.02	670.75	END OF TANGENT
5052.37	5125.05	0.00	0.00	-174.39	712.32	-708.50	733.36	EOD TO VERTICAL
5778.80	5851.47	0.00	0.00	-174.39	712.32	-708.50	733.36	KOP (8°/100ft BUR)
6495.00	6976.47	90.00	269.84	-176.39	-3.87	7.58	1449.55	EP: 1705ft FNL & 737ft FEL of Sec 1
6495.00	16633.16	90.00	269.84	-203.21	-9660.53	9662.66	11106.24	BHL: 1705ft FNL & 50ft FWL of Sec 2

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - RED CLOUD 7N	5778.80	-174.39	712.32	40.344005	-104.489613
EP - RED CLOUD 7N	6495.00	-176.39	-3.87	40.344000	-104.492183
BHL - RED CLOUD 7N	6495.00	-203.21	-9660.53	40.343921	-104.526825
SHL - RED CLOUD 7N	0.00	0.00	0.00	40.344484	-104.492169

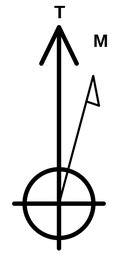


PROPOSED LOCAL COORDINATES:

SHL: 1529ft FNL & 734ft FEL of Sec 1

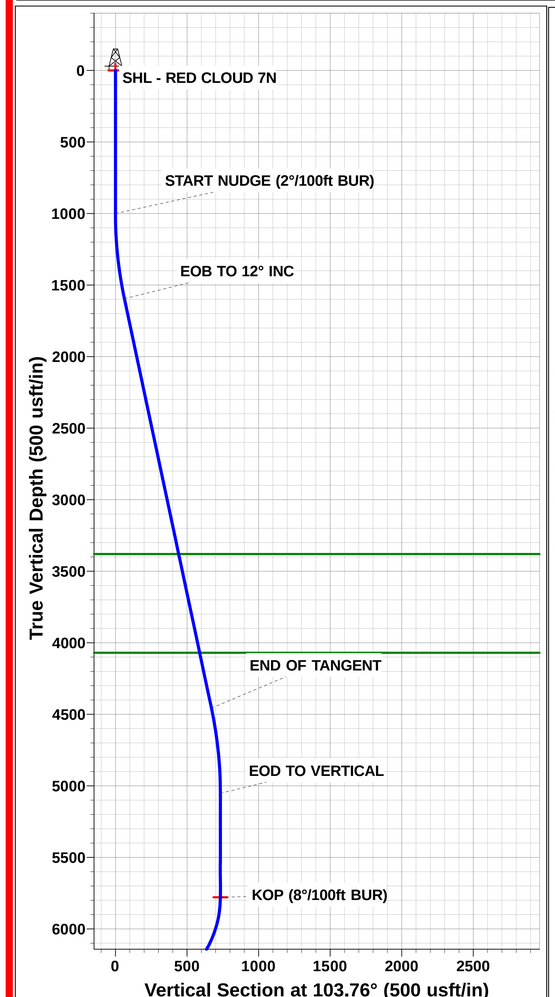
EP: 1705ft FNL & 737ft FEL of Sec 1

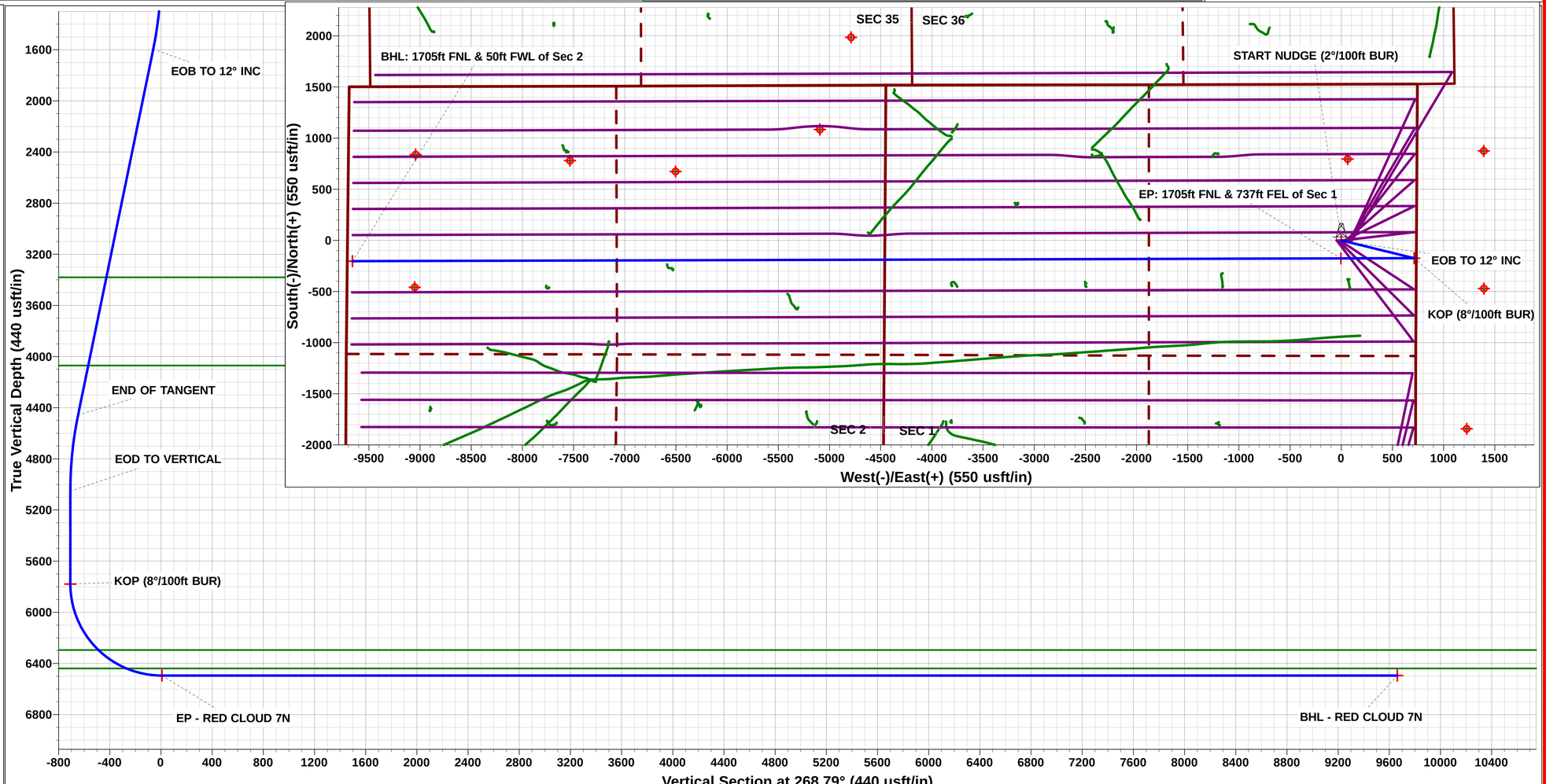
BHL: 1705ft FNL & 50ft FWL of Sec 2



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 7N

ORIGINAL WELLBORE
PROPOSAL #2

Anticollision Report

13 August, 2018

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well RED CLOUD 7N
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 7N	**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 #2	**Offset TVD Reference:**	Offset Datum

Reference	PROPOSAL #2		
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	16,633.16	PROPOSAL #2 (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 -	1,293.16	1,251.26	1,987.65	1,982.91	418.872	CC
EXIST HZ SOONER STATE B #36-63HN - Wellbore #1 -	1,300.00	1,254.26	1,987.66	1,982.89	417.013	ES
EXIST HZ SOONER STATE B #36-63HN - Wellbore #1 -	11,500.00	11,055.00	2,832.85	2,564.33	10.550	SF
EXIST VERT ROTHE #4-6 - Wellbore #1 - Design #1	5,851.47	5,761.80	1,250.09	1,120.66	9.659	CC
EXIST VERT ROTHE #4-6 - Wellbore #1 - Design #1	5,900.00	5,810.29	1,250.99	1,116.24	9.284	ES
EXIST VERT ROTHE #4-6 - Wellbore #1 - Design #1	5,950.00	5,860.02	1,253.80	1,118.32	9.255	SF
EXIST VERT ROTHE #5-6 - Wellbore #1 - Design #1	5,851.47	5,761.80	743.00	608.82	5.537	CC, ES, SF
RED CLOUD 0N - ORIGINAL WELLBORE - PROPOSAL	300.00	300.00	104.95	103.88	97.892	CC, ES
RED CLOUD 0N - ORIGINAL WELLBORE - PROPOSAL	16,600.00	17,188.44	1,832.51	1,264.22	3.225	SF
RED CLOUD 10N - ORIGINAL WELLBORE - PROPOSA	1,000.00	1,000.00	44.99	40.77	10.665	CC, ES
RED CLOUD 10N - ORIGINAL WELLBORE - PROPOSA	16,633.16	16,820.40	817.78	251.80	1.445	Level 3, SF
RED CLOUD 1N - ORIGINAL WELLBORE - PROPOSAL	400.00	400.00	89.98	88.46	59.135	CC, ES
RED CLOUD 1N - ORIGINAL WELLBORE - PROPOSAL	16,633.16	16,824.82	1,555.01	987.38	2.739	SF
RED CLOUD 2N - ORIGINAL WELLBORE - PROPOSAL	500.00	500.00	74.99	73.02	38.042	CC, ES
RED CLOUD 2N - ORIGINAL WELLBORE - PROPOSAL	16,633.16	16,810.73	1,277.36	710.94	2.255	SF
RED CLOUD 3N - ORIGINAL WELLBORE - PROPOSAL	600.00	600.00	59.99	57.57	24.782	CC, ES
RED CLOUD 3N - ORIGINAL WELLBORE - PROPOSAL	16,633.16	16,688.00	1,019.88	452.20	1.797	SF
RED CLOUD 4N - ORIGINAL WELLBORE - PROPOSAL	700.00	700.00	44.99	42.12	15.675	CC, ES
RED CLOUD 4N - ORIGINAL WELLBORE - PROPOSAL	16,633.16	16,726.85	769.08	204.33	1.362	Level 3, SF
RED CLOUD 5N - ORIGINAL WELLBORE - PROPOSAL	800.00	800.00	29.99	26.67	9.035	CC
RED CLOUD 5N - ORIGINAL WELLBORE - PROPOSAL	16,633.16	16,639.13	509.97	-58.06	0.898	Level 1, ES, SF
RED CLOUD 6N - ORIGINAL WELLBORE - PROPOSAL	900.00	900.00	15.00	11.23	3.979	CC
RED CLOUD 6N - ORIGINAL WELLBORE - PROPOSAL	16,633.16	16,710.29	267.25	-276.54	0.491	Level 1, ES, SF
RED CLOUD 8N - ORIGINAL WELLBORE - PROPOSAL	1,000.00	1,000.00	15.00	10.78	3.555	CC
RED CLOUD 8N - ORIGINAL WELLBORE - PROPOSAL	16,633.16	16,715.60	312.85	-241.63	0.564	Level 1, ES, SF
RED CLOUD 9N - ORIGINAL WELLBORE - PROPOSAL	1,000.00	1,000.00	29.99	25.78	7.110	CC
RED CLOUD 9N - ORIGINAL WELLBORE - PROPOSAL	16,633.16	16,689.63	559.85	-8.12	0.986	Level 1, ES, SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well RED CLOUD 7N
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 7N	**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 #2	**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	7,676.08	6,284.58	2,243.67	2,205.35	58.538	CC
ABDN VERT ROTHE STATE B #36-15 - Wellbore #1 - W	7,700.00	6,284.07	2,243.80	2,204.90	57.677	ES
ABDN VERT ROTHE STATE B #36-15 - Wellbore #1 - W	11,400.00	6,214.39	4,346.82	4,208.17	31.350	SF
ABDN VERT ROTHE STATE B #36-16 - Wellbore #1 - W	1,278.99	1,272.84	2,375.17	2,371.74	691.889	CC
ABDN VERT ROTHE STATE B #36-16 - Wellbore #1 - W	1,300.00	1,293.40	2,375.18	2,371.70	681.427	ES
ABDN VERT ROTHE STATE B #36-16 - Wellbore #1 - W	16,300.00	6,100.00	9,992.69	9,718.54	36.450	SF
EXIST DD ECKHARDT B #35-13 - Wellbore #1 - Wellbor	15,829.14	6,611.13	2,242.89	1,978.62	8.487	CC
EXIST DD ECKHARDT B #35-13 - Wellbore #1 - Wellbor	15,900.00	6,610.55	2,244.01	1,977.75	8.428	ES
EXIST DD ECKHARDT B #35-13 - Wellbore #1 - Wellbor	16,400.00	6,606.42	2,314.40	2,034.10	8.257	SF
EXIST VERT BAKER STATE B #36-13 - Wellbore #1 - W	10,582.73	6,400.00	2,398.20	2,281.71	20.587	CC
EXIST VERT BAKER STATE B #36-13 - Wellbore #1 - W	10,600.00	6,400.00	2,398.26	2,281.30	20.504	ES
EXIST VERT BAKER STATE B #36-13 - Wellbore #1 - W	12,000.00	6,347.77	2,785.09	2,629.28	17.875	SF
EXIST VERT BAKER STATE B #36-14 - Wellbore #1 - W	9,191.85	6,379.51	2,257.14	2,178.95	28.868	CC
EXIST VERT BAKER STATE B #36-14 - Wellbore #1 - W	9,300.00	6,378.36	2,259.73	2,178.59	27.850	ES
EXIST VERT BAKER STATE B #36-14 - Wellbore #1 - W	11,000.00	6,362.70	2,892.02	2,763.97	22.586	SF
EXIST VERT HOSHIKO #2 - Wellbore #1 - Wellbore #1	13,148.91	6,535.18	2,407.33	2,219.02	12.784	CC
EXIST VERT HOSHIKO #2 - Wellbore #1 - Wellbore #1	13,200.00	6,535.25	2,407.87	2,218.13	12.691	ES
EXIST VERT HOSHIKO #2 - Wellbore #1 - Wellbore #1	14,000.00	6,536.51	2,553.34	2,341.21	12.037	SF
EXIST VERT HOSHIKO #35-16H4 - Wellbore #1 - Desig	11,755.48	6,505.01	2,174.26	1,898.54	7.886	CC
EXIST VERT HOSHIKO #35-16H4 - Wellbore #1 - Desig	11,800.00	6,505.01	2,174.72	1,897.76	7.852	ES
EXIST VERT HOSHIKO #35-16H4 - Wellbore #1 - Desig	12,200.00	6,505.01	2,219.24	1,931.11	7.702	SF
EXIST VERT HOSHIKO B #35-14 - Wellbore #1 - Wellbo	14,659.89	6,500.00	2,321.63	2,091.24	10.077	CC
EXIST VERT HOSHIKO B #35-14 - Wellbore #1 - Wellbo	14,700.00	6,500.00	2,321.98	2,090.46	10.030	ES
EXIST VERT HOSHIKO B #35-14 - Wellbore #1 - Wellbo	15,300.00	6,494.35	2,408.25	2,159.92	9.698	SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well RED CLOUD 7N
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 7N	**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 #2	**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	16,633.16	6,493.51	3,643.65	3,357.37	12.727	CC, ES, SF
ABDN VERT BOOY HILLS FARM #2-12 - Wellbore #1 -	15,876.42	6,546.01	1,429.93	1,165.53	5.408	CC
ABDN VERT BOOY HILLS FARM #2-12 - Wellbore #1 -	15,900.00	6,546.40	1,430.12	1,165.07	5.396	ES
ABDN VERT BOOY HILLS FARM #2-12 - Wellbore #1 -	16,100.00	6,549.67	1,447.30	1,176.65	5.348	SF
ABDN VERT FHA #10-1 - Wellbore #1 - Wellbore #1	8,199.51	6,491.57	1,610.28	1,558.70	31.220	CC
ABDN VERT FHA #10-1 - Wellbore #1 - Wellbore #1	8,200.00	6,491.58	1,610.28	1,558.69	31.212	ES
ABDN VERT FHA #10-1 - Wellbore #1 - Wellbore #1	9,600.00	6,509.76	2,134.02	2,044.66	23.881	SF
ABDN VERT FHA #15-1 - Wellbore #1 - Wellbore #1	8,146.67	6,404.63	2,913.49	2,863.32	58.068	CC
ABDN VERT FHA #15-1 - Wellbore #1 - Wellbore #1	8,200.00	6,403.78	2,913.98	2,862.42	56.517	ES
ABDN VERT FHA #15-1 - Wellbore #1 - Wellbore #1	13,100.00	6,338.34	5,746.19	5,559.68	30.809	SF
ABDN VERT HOSHIKO C #2-8 - Wellbore #1 - Wellbore	12,377.43	6,493.37	338.39	171.64	2.029	CC, ES
ABDN VERT HOSHIKO C #2-8 - Wellbore #1 - Wellbore	12,400.00	6,493.90	339.14	171.77	2.026	SF
ABDN VERT SAND CREEK RANCH C #2-3X - Wellbore	14,574.26	6,469.09	1,123.21	895.05	4.923	CC
ABDN VERT SAND CREEK RANCH C #2-3X - Wellbore	14,600.00	6,469.45	1,123.50	894.62	4.909	ES
ABDN VERT SAND CREEK RANCH C #2-3X - Wellbore	14,700.00	6,470.85	1,130.22	898.53	4.878	SF
ABDN VERT SAND CREEK RANCH CO #2-3 - Wellbore	14,504.67	6,501.01	976.71	624.12	2.770	CC, ES
ABDN VERT SAND CREEK RANCH CO #2-3 - Wellbore	14,600.00	6,501.01	981.35	626.09	2.762	SF
ABDN VERT SHAKLEE #1 - Wellbore #1 - Wellbore #1	16,109.86	6,500.00	2,864.04	2,592.96	10.565	CC
ABDN VERT SHAKLEE #1 - Wellbore #1 - Wellbore #1	16,200.00	6,500.00	2,865.46	2,591.85	10.473	ES
ABDN VERT SHAKLEE #1 - Wellbore #1 - Wellbore #1	16,633.16	6,500.00	2,911.45	2,625.69	10.189	SF
ABDN VERT SHAKLEE #2 - Wellbore #1 - Wellbore #1	14,773.90	6,493.14	2,835.64	2,601.98	12.136	CC
ABDN VERT SHAKLEE #2 - Wellbore #1 - Wellbore #1	14,900.00	6,497.37	2,838.44	2,601.25	11.967	ES
ABDN VERT SHAKLEE #2 - Wellbore #1 - Wellbore #1	15,700.00	6,522.75	2,982.88	2,723.26	11.490	SF
ABDN VERT SHAKLEE #3 - Wellbore #1 - Wellbore #1	14,737.10	6,512.21	1,567.05	1,334.49	6.738	CC
ABDN VERT SHAKLEE #3 - Wellbore #1 - Wellbore #1	14,800.00	6,512.02	1,568.31	1,333.99	6.693	ES
ABDN VERT SHAKLEE #3 - Wellbore #1 - Wellbore #1	15,000.00	6,511.46	1,588.95	1,349.02	6.623	SF
EXIST DD HOFFMAN C #2-20D - Wellbore #1 - Wellbore	15,311.45	6,637.21	853.52	584.24	3.170	CC, ES
EXIST DD HOFFMAN C #2-20D - Wellbore #1 - Wellbore	15,400.00	6,638.73	858.10	586.35	3.158	SF
EXIST DD HOFFMAN C #2-25D - Wellbore #1 - Wellbore	15,383.20	6,785.55	2,260.47	1,986.62	8.255	CC
EXIST DD HOFFMAN C #2-25D - Wellbore #1 - Wellbore	15,400.00	6,785.57	2,260.53	1,986.21	8.241	ES
EXIST DD HOFFMAN C #2-25D - Wellbore #1 - Wellbore	15,900.00	6,786.00	2,318.79	2,030.45	8.042	SF
EXIST DD HOFFMAN C #2-33D - Wellbore #1 - Wellbore	16,633.16	7,269.06	2,268.87	1,931.29	6.721	CC, ES, SF
EXIST DD HOFFMAN C 2-21D - Wellbore #1 - Wellbore	14,131.61	6,529.66	791.53	564.34	3.484	CC, ES
EXIST DD HOFFMAN C 2-21D - Wellbore #1 - Wellbore	14,200.00	6,530.27	794.48	565.37	3.468	SF
EXIST DD MARLEY C #1-18D - Wellbore #1 - Wellbore #	8,934.26	6,593.85	383.60	298.05	4.484	CC, ES
EXIST DD MARLEY C #1-18D - Wellbore #1 - Wellbore #	9,000.00	6,594.03	389.19	301.86	4.457	SF
EXIST DD MARLEY C #1-24D - Wellbore #1 - Wellbore #	8,749.14	7,004.25	2,327.72	2,218.81	21.374	CC
EXIST DD MARLEY C #1-24D - Wellbore #1 - Wellbore #	8,800.00	7,003.67	2,328.27	2,218.00	21.113	ES
EXIST DD MARLEY C #1-24D - Wellbore #1 - Wellbore #	10,100.00	6,989.28	2,691.26	2,545.39	18.449	SF
EXIST DD MARLEY C #1-28D - Wellbore #1 - Wellbore #	8,668.06	6,568.93	1,888.12	1,806.63	23.169	CC
EXIST DD MARLEY C #1-28D - Wellbore #1 - Wellbore #	8,700.00	6,569.47	1,888.39	1,806.04	22.931	ES
EXIST DD MARLEY C #1-28D - Wellbore #1 - Wellbore #	9,900.00	6,581.00	2,254.37	2,139.23	19.581	SF
EXIST DD MARLEY C #1-30D - Wellbore #1 - Wellbore #	11,332.87	6,552.00	1,661.95	1,509.48	10.900	CC
EXIST DD MARLEY C #1-30D - Wellbore #1 - Wellbore #	11,400.00	6,552.00	1,663.31	1,508.96	10.777	ES
EXIST DD MARLEY C #1-30D - Wellbore #1 - Wellbore #	11,800.00	6,552.00	1,726.35	1,560.85	10.431	SF
EXIST DD MARLEY C #1-31D - Wellbore #1 - Wellbore #	11,592.00	6,700.63	264.81	101.08	1.617	CC
EXIST DD MARLEY C #1-31D - Wellbore #1 - Wellbore #	11,600.00	6,700.73	264.93	100.98	1.616	ES, SF
EXIST DD MARLEY C #1-33D - Wellbore #1 - Wellbore #	11,298.83	6,604.11	2,226.80	2,075.99	14.765	CC
EXIST DD MARLEY C #1-33D - Wellbore #1 - Wellbore #	11,400.00	6,603.96	2,229.10	2,075.47	14.509	ES
EXIST DD MARLEY C #1-33D - Wellbore #1 - Wellbore #	12,200.00	6,602.71	2,402.24	2,226.29	13.653	SF
EXIST DD PANTHER C #11-27D - Wellbore #1 - Wellbor	12,795.83	6,627.65	3,524.64	3,331.81	18.279	CC
EXIST DD PANTHER C #11-27D - Wellbore #1 - Wellbor	12,900.00	6,627.25	3,526.18	3,330.44	18.015	ES

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well RED CLOUD 7N
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 7N	**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 #2	**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 #11-27D - Wellbore #1 - Wellbor	14,600.00	6,620.18	3,959.56	3,716.23	16.272	SF
EXIST DD PANTHER C #11-28D - Wellbore #1 - Wellbor	14,153.69	7,023.51	3,502.99	3,248.21	13.749	CC
EXIST DD PANTHER C #11-28D - Wellbore #1 - Wellbor	14,300.00	7,021.98	3,506.04	3,247.17	13.543	ES
EXIST DD PANTHER C #11-28D - Wellbore #1 - Wellbor	15,500.00	7,009.74	3,752.77	3,460.27	12.830	SF
EXIST DD PANTHER C #2-23D - Wellbore #1 - Wellbore	12,769.25	6,638.40	2,233.59	2,041.32	11.617	CC
EXIST DD PANTHER C #2-23D - Wellbore #1 - Wellbore	12,800.00	6,638.07	2,233.80	2,040.67	11.566	ES
EXIST DD PANTHER C #2-23D - Wellbore #1 - Wellbore	13,500.00	6,630.55	2,350.07	2,137.37	11.049	SF
EXIST HZ BOBCAT C #12-69HN - Wellbore #1 - Wellbor	7,300.00	11,102.74	3,430.77	3,267.77	21.048	CC
EXIST HZ BOBCAT C #12-69HN - Wellbore #1 - Wellbor	7,400.00	11,047.48	3,431.20	3,267.58	20.971	ES
EXIST HZ BOBCAT C #12-69HN - Wellbore #1 - Wellbor	14,200.00	5,996.00	4,076.09	3,850.51	18.070	SF
EXIST HZ HOFFMAN C #02-65HN - Wellbore #1 - Wellb	6,792.91	13,691.00	757.33	530.81	3.343	CC
EXIST HZ HOFFMAN C #02-65HN - Wellbore #1 - Wellb	6,800.00	13,691.00	757.36	530.77	3.342	ES, SF
EXIST HZ TOBY C #12-79HN - Wellbore #1 - Wellbore #	11,375.33	6,057.00	3,630.93	3,475.72	23.393	CC
EXIST HZ TOBY C #12-79HN - Wellbore #1 - Wellbore #	11,500.00	6,057.00	3,633.07	3,474.43	22.901	ES
EXIST HZ TOBY C #12-79HN - Wellbore #1 - Wellbore #	13,700.00	6,057.00	4,311.36	4,092.06	19.660	SF
EXIST VERT AMIGO #1 - Wellbore #1 - Wellbore #1	10,725.22	6,350.00	294.54	182.76	2.635	CC, ES, SF
EXIST VERT AMIGO #2 - Wellbore #1 - Wellbore #1	9,474.31	6,474.05	225.61	139.32	2.615	CC, ES
EXIST VERT AMIGO #2 - Wellbore #1 - Wellbore #1	9,500.00	6,474.40	227.07	140.08	2.610	SF
EXIST VERT AMIGO FARMS #1-12 - Wellbore #1 - Well	10,786.79	6,498.25	1,572.33	1,450.18	12.873	CC
EXIST VERT AMIGO FARMS #1-12 - Wellbore #1 - Well	10,800.00	6,498.25	1,572.38	1,449.87	12.835	ES
EXIST VERT AMIGO FARMS #1-12 - Wellbore #1 - Well	11,400.00	6,498.07	1,687.67	1,548.47	12.123	SF
EXIST VERT FEIT #1 - Wellbore #1 - Wellbore #1	9,314.35	6,446.90	1,032.26	950.75	12.665	CC, ES
EXIST VERT FEIT #1 - Wellbore #1 - Wellbore #1	9,700.00	6,436.66	1,101.89	1,009.83	11.969	SF
EXIST VERT FEIT #1-4 - Wellbore #1 - Wellbore #1	10,718.79	6,350.00	1,328.00	1,207.86	11.054	CC, ES
EXIST VERT FEIT #1-4 - Wellbore #1 - Wellbore #1	11,100.00	6,350.00	1,381.63	1,250.94	10.571	SF
EXIST VERT FHA #2-1 - Wellbore #1 - Wellbore #1	14,739.93	6,506.72	247.31	14.64	1.063	Level 2, CC, ES, SF
EXIST VERT FOOS #1-16I4 - Wellbore #1 - Wellbore #1	7,311.54	6,564.04	2,556.43	2,526.49	85.368	CC
EXIST VERT FOOS #1-16I4 - Wellbore #1 - Wellbore #1	7,400.00	6,571.63	2,557.95	2,526.09	80.282	ES
EXIST VERT FOOS #1-16I4 - Wellbore #1 - Wellbore #1	14,500.00	6,800.00	7,620.70	7,396.11	33.932	SF
EXIST VERT FUEGO C #1-19 - Wellbore #1 - Wellbore #	10,135.02	6,461.86	541.76	437.59	5.200	CC, ES
EXIST VERT FUEGO C #1-19 - Wellbore #1 - Wellbore #	10,200.00	6,463.09	545.64	439.67	5.149	SF
EXIST VERT HAPPY AMIGO C #1-25 - Wellbore #1 - W	10,145.52	6,514.23	2,532.41	2,427.71	24.186	CC
EXIST VERT HAPPY AMIGO C #1-25 - Wellbore #1 - W	10,200.00	6,513.80	2,533.00	2,426.78	23.848	ES
EXIST VERT HAPPY AMIGO C #1-25 - Wellbore #1 - W	11,900.00	6,500.00	3,080.77	2,927.28	20.071	SF
EXIST VERT HAPPY TALK #1 - Wellbore #1 - Wellbore	9,534.39	6,475.65	1,549.67	1,461.72	17.619	CC
EXIST VERT HAPPY TALK #1 - Wellbore #1 - Wellbore	9,600.00	6,475.32	1,551.06	1,461.30	17.280	ES
EXIST VERT HAPPY TALK #1 - Wellbore #1 - Wellbore	10,300.00	6,471.83	1,728.48	1,619.40	15.846	SF
EXIST VERT HAPPY TALK #2 - Wellbore #1 - Wellbore	9,488.38	6,528.27	2,840.56	2,754.30	32.930	CC
EXIST VERT HAPPY TALK #2 - Wellbore #1 - Wellbore	9,600.00	6,527.89	2,842.75	2,753.43	31.825	ES
EXIST VERT HAPPY TALK #2 - Wellbore #1 - Wellbore	12,100.00	6,518.83	3,858.67	3,699.93	24.308	SF
EXIST VERT HOFFMAN C #11-29 - Wellbore #1 - Wellb	15,457.23	6,576.07	3,286.18	3,033.22	12.991	CC
EXIST VERT HOFFMAN C #11-29 - Wellbore #1 - Wellb	15,500.00	6,576.99	3,286.46	3,032.30	12.931	ES
EXIST VERT HOFFMAN C #11-29 - Wellbore #1 - Wellb	16,633.16	6,619.57	3,490.16	3,204.31	12.210	SF
EXIST VERT HOSHIKO #1-2 - Wellbore #1 - Design #1	12,062.82	6,493.01	1,274.24	990.06	4.484	CC
EXIST VERT HOSHIKO #1-2 - Wellbore #1 - Design #1	12,100.00	6,493.01	1,274.78	989.57	4.470	ES
EXIST VERT HOSHIKO #1-2 - Wellbore #1 - Design #1	12,200.00	6,493.01	1,281.60	993.60	4.450	SF
EXIST VERT HOSHIKO #2-2 - Wellbore #1 - Design #1	13,473.65	6,517.01	867.91	544.04	2.680	CC
EXIST VERT HOSHIKO #2-2 - Wellbore #1 - Design #1	13,500.00	6,517.01	868.31	543.70	2.675	ES, SF
EXIST VERT HOSHIKO #7-2 - Wellbore #1 - Wellbore #1	13,558.49	6,489.12	43.14	-156.43	0.216	Level 1, CC, ES, SF
EXIST VERT MCDERMED #1-1 - Wellbore #1 - Design #	1,000.00	986.00	797.82	778.29	40.852	CC
EXIST VERT MCDERMED #1-1 - Wellbore #1 - Design #	1,300.00	1,285.45	800.50	774.32	30.576	ES
EXIST VERT MCDERMED #1-1 - Wellbore #1 - Design #	7,000.00	6,481.00	975.97	825.58	6.489	SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well RED CLOUD 7N
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 7N	**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 #2	**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 MCDERMED #2-1 - Wellbore #1 - Wellbore	8,171.74	6,450.09	1,027.36	976.39	20.157	CC
EXIST VERT MCDERMED #2-1 - Wellbore #1 - Wellbore	8,200.00	6,450.20	1,027.75	976.04	19.878	ES
EXIST VERT MCDERMED #2-1 - Wellbore #1 - Wellbore	8,700.00	6,452.07	1,155.21	1,090.24	17.780	SF
EXIST VERT MCFERREN #4-2 - Wellbore #1 - Design #	16,012.48	4,629.00	2,139.59	1,951.31	11.364	CC, ES
EXIST VERT MCFERREN #4-2 - Wellbore #1 - Design #	16,400.00	4,629.00	2,174.40	1,980.27	11.201	SF
EXIST VERT MCFERREN #5-2 - Wellbore #1 - Design #	16,024.89	6,521.00	257.23	-24.09	0.914	Level 1, CC, ES, SF
EXIST VERT MINOR #1 - Wellbore #1 - Wellbore #1	10,818.53	6,400.00	3,004.10	2,881.11	24.426	CC
EXIST VERT MINOR #1 - Wellbore #1 - Wellbore #1	10,900.00	6,400.00	3,005.21	2,879.95	23.993	ES
EXIST VERT MINOR #1 - Wellbore #1 - Wellbore #1	12,900.00	6,400.00	3,654.75	3,473.72	20.189	SF
EXIST VERT REIN #1 - Wellbore #1 - Wellbore #1	8,132.09	6,464.43	142.67	92.22	2.828	CC, ES, SF
EXIST VERT REIN #1-8 - Wellbore #1 - Wellbore #1	6,895.71	6,472.63	206.79	184.15	9.137	CC
EXIST VERT REIN #1-8 - Wellbore #1 - Wellbore #1	6,900.00	6,473.02	206.83	184.14	9.117	ES, SF
EXIST VERT ROTHE #1 - Wellbore #1 - Wellbore #1	12,200.81	6,491.39	1,483.23	1,321.61	9.177	CC, ES
EXIST VERT ROTHE #1 - Wellbore #1 - Wellbore #1	12,600.00	6,499.24	1,536.00	1,363.22	8.890	SF
EXIST VERT ROTHE #2 - Wellbore #1 - Wellbore #1	13,434.53	6,464.24	2,875.45	2,679.36	14.664	CC
EXIST VERT ROTHE #2 - Wellbore #1 - Wellbore #1	13,500.00	6,463.86	2,876.20	2,678.27	14.532	ES
EXIST VERT ROTHE #2 - Wellbore #1 - Wellbore #1	14,600.00	6,457.48	3,102.66	2,873.93	13.564	SF
EXIST VERT ROTHE #2-10 - Wellbore #1 - Wellbore #1	13,262.19	6,172.09	1,436.10	1,248.77	7.666	CC
EXIST VERT ROTHE #2-10 - Wellbore #1 - Wellbore #1	13,300.00	6,173.57	1,436.60	1,248.20	7.625	ES
EXIST VERT ROTHE #2-10 - Wellbore #1 - Wellbore #1	13,600.00	6,200.00	1,475.29	1,278.04	7.479	SF
EXIST VERT ROTHE #3 - Wellbore #1 - Wellbore #1	12,156.35	6,487.88	2,865.82	2,705.15	17.837	CC
EXIST VERT ROTHE #3 - Wellbore #1 - Wellbore #1	12,200.00	6,487.74	2,866.15	2,704.26	17.704	ES
EXIST VERT ROTHE #3 - Wellbore #1 - Wellbore #1	13,600.00	6,483.39	3,208.90	3,007.86	15.961	SF
EXIST VERT SPIKE STATE #CC6-12 - Wellbore #1 - De	5,851.47	5,755.80	1,745.29	1,616.90	13.593	CC
EXIST VERT SPIKE STATE #CC6-12 - Wellbore #1 - De	5,900.00	5,804.29	1,745.77	1,613.93	13.241	ES
EXIST VERT SPIKE STATE #CC6-12 - Wellbore #1 - De	6,150.00	6,045.76	1,764.13	1,628.50	13.007	SF
EXIST VERT SPIKE STATE #CC6-13 - Wellbore #1 - We	5,065.98	4,947.94	3,136.29	3,118.03	171.764	CC, ES
EXIST VERT SPIKE STATE #CC6-13 - Wellbore #1 - We	15,200.00	6,212.59	9,917.49	9,672.62	40.501	SF
LINDSEY 10N - ORIGINAL WELLBORE - PROPOSAL #	264.16	271.16	3,441.25	3,440.32	3,713.266	CC
LINDSEY 10N - ORIGINAL WELLBORE - PROPOSAL #	16,633.16	16,473.16	3,477.13	2,909.54	6.126	ES, SF
LINDSEY 1C - ORIGINAL WELLBORE - PROPOSAL #1	6,016.90	6,379.47	1,124.23	1,086.14	29.516	CC
LINDSEY 1C - ORIGINAL WELLBORE - PROPOSAL #1	16,600.00	17,061.79	1,126.54	576.01	2.046	ES, SF
LINDSEY 2N - ORIGINAL WELLBORE - PROPOSAL #1	16,546.08	16,856.65	1,356.24	791.85	2.403	CC
LINDSEY 2N - ORIGINAL WELLBORE - PROPOSAL #1	16,600.00	16,856.65	1,357.17	791.27	2.398	ES
LINDSEY 2N - ORIGINAL WELLBORE - PROPOSAL #1	16,633.16	16,856.65	1,358.81	791.97	2.397	SF
LINDSEY 3N - ORIGINAL WELLBORE - PROPOSAL #1	16,548.10	16,822.59	1,624.23	1,060.28	2.880	CC
LINDSEY 3N - ORIGINAL WELLBORE - PROPOSAL #1	16,600.00	16,822.59	1,624.98	1,059.58	2.874	ES
LINDSEY 3N - ORIGINAL WELLBORE - PROPOSAL #1	16,633.16	16,822.59	1,626.33	1,060.00	2.872	SF
LINDSEY 4N - ORIGINAL WELLBORE - PROPOSAL #1	16,552.94	16,701.63	1,884.35	1,319.61	3.337	CC
LINDSEY 4N - ORIGINAL WELLBORE - PROPOSAL #1	16,600.00	16,701.63	1,884.90	1,318.85	3.330	ES
LINDSEY 4N - ORIGINAL WELLBORE - PROPOSAL #1	16,633.16	16,701.63	1,886.00	1,319.02	3.326	SF
LINDSEY 5N - ORIGINAL WELLBORE - PROPOSAL #1	16,554.66	16,694.71	2,151.85	1,587.35	3.812	CC
LINDSEY 5N - ORIGINAL WELLBORE - PROPOSAL #1	16,600.00	16,694.71	2,152.32	1,586.55	3.804	ES
LINDSEY 5N - ORIGINAL WELLBORE - PROPOSAL #1	16,633.16	16,694.71	2,153.27	1,586.57	3.800	SF
LINDSEY 6N - ORIGINAL WELLBORE - PROPOSAL #1	16,555.81	16,594.46	2,416.16	1,851.31	4.277	CC
LINDSEY 6N - ORIGINAL WELLBORE - PROPOSAL #1	16,633.16	16,594.46	2,417.40	1,850.37	4.263	ES, SF
LINDSEY 7N - ORIGINAL WELLBORE - PROPOSAL #1	16,559.39	16,630.53	2,683.35	2,118.31	4.749	CC
LINDSEY 7N - ORIGINAL WELLBORE - PROPOSAL #1	16,633.16	16,630.53	2,684.36	2,117.26	4.733	ES, SF
LINDSEY 8N - ORIGINAL WELLBORE - PROPOSAL #1	16,560.21	16,558.58	2,944.35	2,378.76	5.206	CC
LINDSEY 8N - ORIGINAL WELLBORE - PROPOSAL #1	16,633.16	16,558.58	2,945.25	2,377.62	5.189	ES, SF
LINDSEY 9N - ORIGINAL WELLBORE - PROPOSAL #1	16,563.79	16,608.36	3,211.34	2,645.47	5.675	CC
LINDSEY 9N - ORIGINAL WELLBORE - PROPOSAL #1	16,633.16	16,608.36	3,212.08	2,644.27	5.657	ES, SF