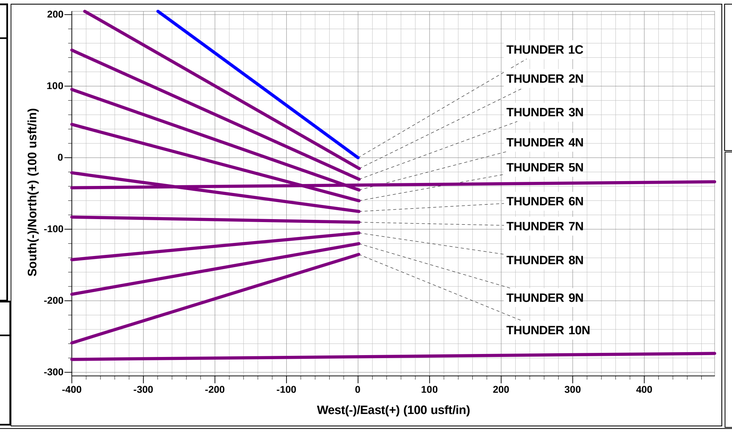
Project: WELD COUNTY, COLORADO (TRUE)
Site: SE NW SEC. 3 T5N R64W 6th P.M. (THUNDER)
Well: THUNDER 1C
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #1

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: 1667ft FNL & 1591ft FWL of Sec 3
300.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2.25°/100ft BUR)
1554.44	1611.67	29.51	306.21	195.19	-266.59	-158.61	330.41	EOB TO 29.51° INC
4644.59	5162.57	29.51	306.21	1228.56	-1677.96	-998.28	2079.64	END OF TANGENT
6055.83	6638.20	0.00	0.00	1448.15	-1977.88	-1176.71	2451.36	EOD TO VERTICAL
6155.83	6738.20	0.00	0.00	1448.15	-1977.88	-1176.71	2451.36	KOP (8°/100ft BUR)
6872.00	7869.57	90.51	89.47	1454.83	-1255.34	-519.58	3173.93	EP *NEW*: 200ft FNL & 330ft FWL of Sec 3
6832.00	12319.26	90.52	89.46	1496.34	3193.97	3527.11	7623.43	BHL: 200ft FNL & 500ft FEL of Sec 3

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - THUNDER 1C	6155.83	1448.15	-1977.88	40.434923	-104.547158
EP *NEW* - THUNDER 1C	6872.00	1454.83	-1255.34	40.434942	-104.544562
BHL - THUNDER 1C	6832.00	1496.34	3193.97	40.435055	-104.528579

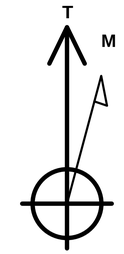


PROPOSED LOCAL COORDINATES:

SHL: 1667ft FNL & 1591ft FWL of Sec 3

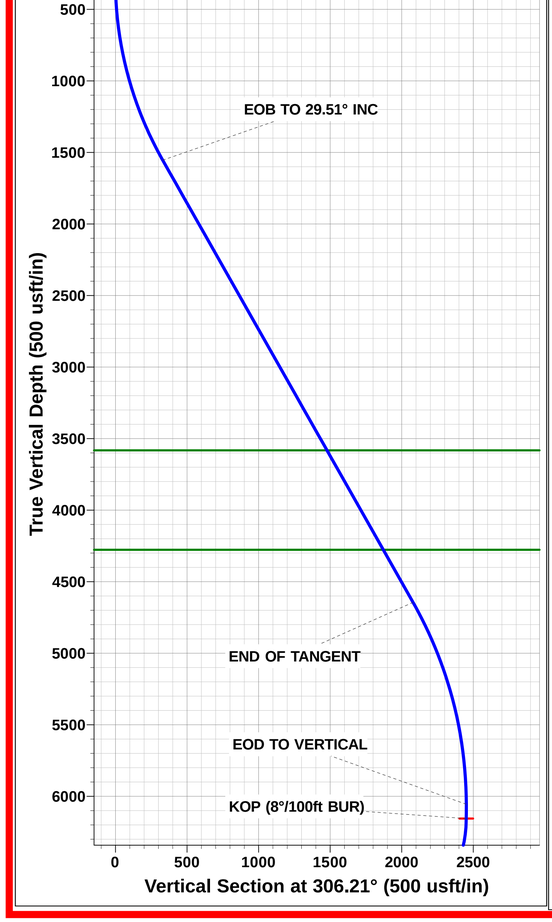
EP *NEW*: 200ft FNL & 330ft FWL of Sec 3

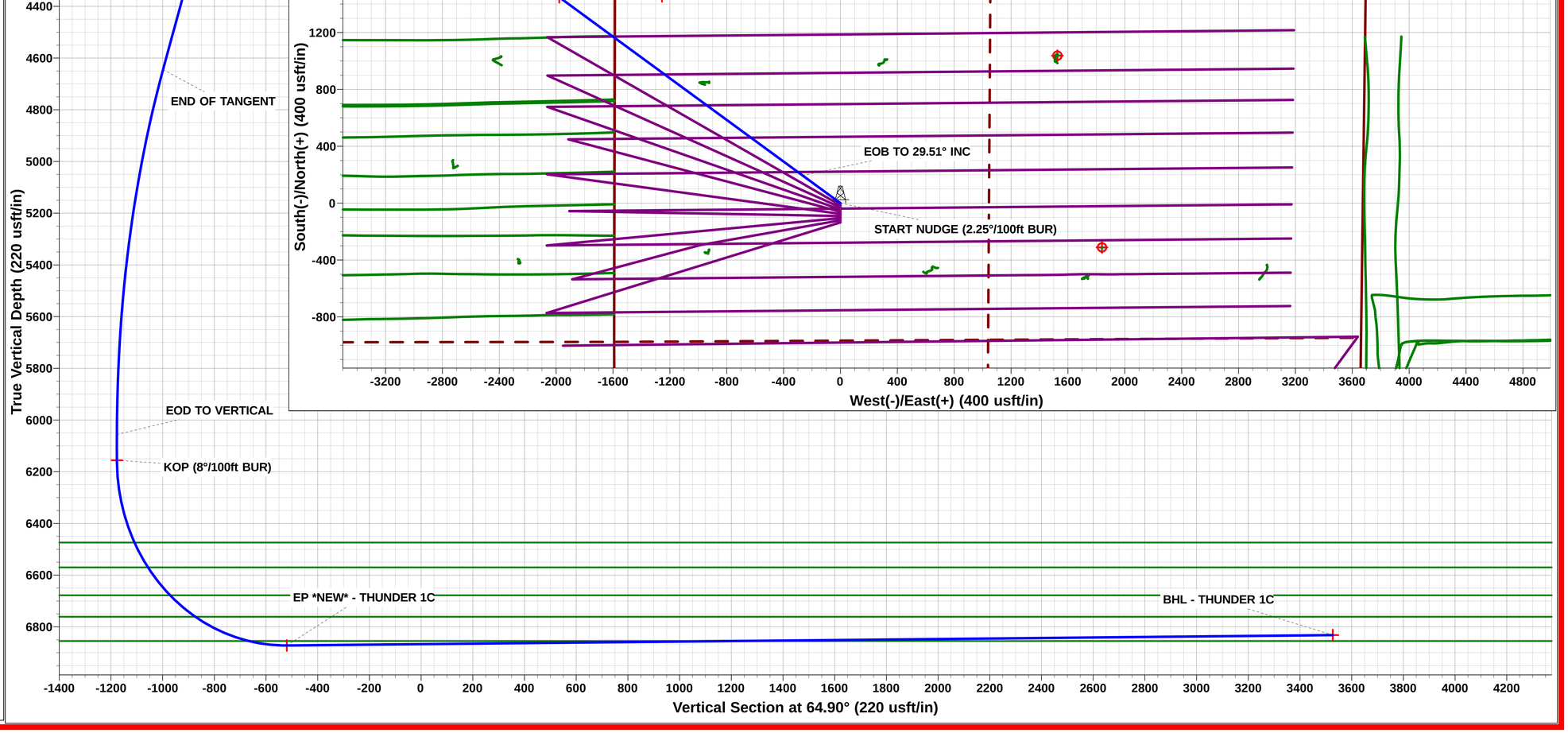
BHL: 200ft FNL & 500ft FEL of Sec 3



Azimuths to True North
Magnetic North: 7.99°

Magnetic Field
Strength: 52322.9snT
Dip Angle: 66.89°
Date: 04/06/2018
Model: IGRF2015





PDC ENERGY

WELD COUNTY, COLORADO (TRUE)
SE NW SEC. 3 T5N R64W 6th P.M. (THUNDER)
THUNDER 1C

ORIGINAL WELLBORE
PROPOSAL #1

Anticollision Report

15 June, 2018

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well THUNDER 1C
Project:	WELD COUNTY, COLORADO (TRUE)	**TVD Reference:**	KB-EST @ 4682.00usft
Reference Site:	SE NW SEC. 3 T5N R64W 6th P.M. (THUNDER)	**MD Reference:**	KB-EST @ 4682.00usft
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	THUNDER 1C	**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 #1	**Offset TVD Reference:**	Offset Datum

Reference	PROPOSAL #1		
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** 14/06/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	12,319.26	PROPOSAL #1 (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
NW NE SEC. 5 T5N R64W 6th P.M.						
EXIST VERT FRENCH 41-4 - Wellbore #1 - Wellbore #1	6,523.13	5,879.98	584.10	531.22	11.047	CC, ES
EXIST VERT FRENCH 41-4 - Wellbore #1 - Wellbore #1	6,600.00	5,956.06	584.30	531.34	11.032	SF
EXIST VERT FRENCH 5 - Wellbore #1 - Wellbore #1	6,751.82	6,122.89	1,372.21	1,318.77	25.679	CC, ES, SF
SNOWMASS 10N - ORIGINAL WELLBORE - ORIGINAL	7,486.39	15,405.00	2,233.52	1,967.95	8.411	CC, ES, SF
SNOWMASS 1C - ORIGINAL WELLBORE - ORIGINAL	7,548.90	14,808.00	53.88	-74.31	0.420	Level 1, CC
SNOWMASS 1C - ORIGINAL WELLBORE - ORIGINAL	7,550.00	14,808.00	53.89	-74.34	0.420	Level 1, ES, SF
SNOWMASS 2N - ORIGINAL WELLBORE - ORIGINAL	7,449.71	14,651.13	276.95	17.91	1.069	Level 2, CC, ES, SF
SNOWMASS 3N - ORIGINAL WELLBORE - ORIGINAL	7,489.61	15,107.00	722.88	456.47	2.713	CC, ES, SF
SNOWMASS 4N - ORIGINAL WELLBORE - ORIGINAL	7,499.88	15,107.00	733.03	466.80	2.753	CC
SNOWMASS 4N - ORIGINAL WELLBORE - ORIGINAL	7,500.00	15,107.00	733.03	466.80	2.753	ES, SF
SNOWMASS 5N - ORIGINAL WELLBORE - ORIGINAL	7,398.55	15,187.38	956.76	689.45	3.579	CC
SNOWMASS 5N - ORIGINAL WELLBORE - ORIGINAL	7,400.00	15,188.55	956.76	689.44	3.579	ES
SNOWMASS 5N - ORIGINAL WELLBORE - ORIGINAL	7,450.00	15,229.35	957.14	689.49	3.576	SF
SNOWMASS 6N - ORIGINAL WELLBORE - ORIGINAL	7,488.19	15,131.00	1,230.91	966.11	4.648	CC, ES
SNOWMASS 6N - ORIGINAL WELLBORE - ORIGINAL	7,500.00	15,131.00	1,230.96	966.15	4.648	SF
SNOWMASS 7N - ORIGINAL WELLBORE - ORIGINAL	7,380.78	15,257.41	1,461.01	1,193.33	5.458	CC
SNOWMASS 7N - ORIGINAL WELLBORE - ORIGINAL	7,450.00	15,311.69	1,461.54	1,192.99	5.442	ES
SNOWMASS 7N - ORIGINAL WELLBORE - ORIGINAL	7,500.00	15,340.00	1,462.45	1,193.38	5.435	SF
SNOWMASS 8N - ORIGINAL WELLBORE - ORIGINAL	7,377.90	15,112.71	1,679.08	1,415.78	6.377	CC
SNOWMASS 8N - ORIGINAL WELLBORE - ORIGINAL	7,500.00	15,220.11	1,680.53	1,415.08	6.331	ES
SNOWMASS 8N - ORIGINAL WELLBORE - ORIGINAL	7,550.00	15,247.00	1,681.86	1,415.78	6.321	SF
SNOWMASS 9N - ORIGINAL WELLBORE - ORIGINAL	7,400.42	15,273.41	1,944.16	1,678.18	7.310	CC
SNOWMASS 9N - ORIGINAL WELLBORE - ORIGINAL	7,450.00	15,313.23	1,944.33	1,677.61	7.290	ES
SNOWMASS 9N - ORIGINAL WELLBORE - ORIGINAL	7,500.00	15,323.00	1,945.04	1,678.06	7.285	SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well THUNDER 1C
Project:	WELD COUNTY, COLORADO (TRUE)	**TVD Reference:**	KB-EST @ 4682.00usft
Reference Site:	SE NW SEC. 3 T5N R64W 6th P.M. (THUNDER)	**MD Reference:**	KB-EST @ 4682.00usft
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	THUNDER 1C	**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 #1	**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 NW SEC. 3 T5N R64W 6th P.M. (THUNDER)						
ABDN VERT FRENCH #1 - Wellbore #1 - Wellbore #1	4,161.35	3,709.47	1,669.02	1,633.36	46.798	CC
ABDN VERT FRENCH #1 - Wellbore #1 - Wellbore #1	4,200.00	3,744.86	1,669.12	1,633.03	46.257	ES
ABDN VERT FRENCH #1 - Wellbore #1 - Wellbore #1	5,500.00	4,873.94	1,787.81	1,740.64	37.904	SF
EXIST HZ LUCCI STATE #B03-69HNL - Wellbore #1 - W	8,100.00	16,967.79	199.24	-32.36	0.860	Level 1, ES, SF
EXIST HZ LUCCI STATE #B03-69HNL - Wellbore #1 - W	8,153.34	16,915.28	199.07	-29.96	0.869	Level 1, CC
EXIST VERT CLEMONS #2-3 - Wellbore #1 - Wellbore #	10,647.73	6,700.00	508.64	412.43	5.286	CC, ES
EXIST VERT CLEMONS #2-3 - Wellbore #1 - Wellbore #	10,700.00	6,700.00	511.32	413.81	5.244	SF
EXIST VERT GRANADOS #4-3 - Wellbore #1 - Wellbore	3,527.49	3,175.10	125.37	96.55	4.350	CC, ES, SF
EXIST VERT STOUT #3-3 - Wellbore #1 - Wellbore #1	9,394.84	6,700.00	512.26	445.21	7.640	CC
EXIST VERT STOUT #3-3 - Wellbore #1 - Wellbore #1	9,400.00	6,700.00	512.29	445.12	7.628	ES
EXIST VERT STOUT #3-3 - Wellbore #1 - Wellbore #1	9,500.00	6,700.00	522.94	453.62	7.544	SF
THUNDER 10N - ORIGINAL WELLBORE - PROPOSAL	300.00	300.00	135.14	134.06	126.045	CC, ES
THUNDER 10N - ORIGINAL WELLBORE - PROPOSAL	12,319.26	12,106.10	2,226.97	1,945.73	7.918	SF
THUNDER 2N - ORIGINAL WELLBORE - PROPOSAL #	300.00	300.00	15.25	14.18	14.225	CC, ES
THUNDER 2N - ORIGINAL WELLBORE - PROPOSAL #	12,319.26	12,225.89	335.60	96.34	1.403	Level 3, SF
THUNDER 3N - ORIGINAL WELLBORE - PROPOSAL #	300.00	300.00	30.21	29.14	28.181	CC, ES
THUNDER 3N - ORIGINAL WELLBORE - PROPOSAL #	12,319.26	12,247.46	560.91	282.38	2.014	SF
THUNDER 4N - ORIGINAL WELLBORE - PROPOSAL #	300.00	300.00	45.17	44.10	42.133	CC, ES
THUNDER 4N - ORIGINAL WELLBORE - PROPOSAL #	12,319.26	12,158.30	790.77	513.68	2.854	SF
THUNDER 5N - ORIGINAL WELLBORE - PROPOSAL #	300.00	300.00	60.17	59.10	56.125	CC, ES
THUNDER 5N - ORIGINAL WELLBORE - PROPOSAL #	12,319.26	11,989.93	1,006.62	729.26	3.629	SF
THUNDER 6N - ORIGINAL WELLBORE - PROPOSAL #	300.00	300.00	75.14	74.07	70.087	CC, ES
THUNDER 6N - ORIGINAL WELLBORE - PROPOSAL #	12,319.26	12,126.87	1,257.25	975.46	4.462	SF
THUNDER 7N - ORIGINAL WELLBORE - PROPOSAL #	300.00	300.00	90.15	89.08	84.084	CC, ES
THUNDER 7N - ORIGINAL WELLBORE - PROPOSAL #	12,319.26	11,962.24	1,509.44	1,231.53	5.431	SF
THUNDER 8N - ORIGINAL WELLBORE - PROPOSAL #	300.00	300.00	105.16	104.08	98.082	CC, ES
THUNDER 8N - ORIGINAL WELLBORE - PROPOSAL #	12,319.26	12,093.13	1,753.80	1,471.92	6.222	SF
THUNDER 9N - ORIGINAL WELLBORE - PROPOSAL #	300.00	300.00	120.13	119.06	112.046	CC, ES
THUNDER 9N - ORIGINAL WELLBORE - PROPOSAL #	12,319.26	11,904.48	1,988.12	1,712.16	7.204	SF

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well THUNDER 1C
Project:	WELD COUNTY, COLORADO (TRUE)	**TVD Reference:**	KB-EST @ 4682.00usft
Reference Site:	SE NW SEC. 3 T5N R64W 6th P.M. (THUNDER)	**MD Reference:**	KB-EST @ 4682.00usft
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	THUNDER 1C	**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 #1	**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 SE SEC 3 T5N R64W 6th P.M. (LIGHTNING)						
ABDN VERT ANNIE #B 3-09 - Wellbore #1 - Wellbore #1	12,180.04	6,716.27	3,331.14	3,192.40	24.010	CC
ABDN VERT ANNIE #B 3-09 - Wellbore #1 - Wellbore #1	12,300.00	6,717.32	3,333.30	3,191.35	23.482	ES
ABDN VERT ANNIE #B 3-09 - Wellbore #1 - Wellbore #1	12,319.26	6,717.49	3,334.05	3,191.58	23.402	SF
ABDN VERT BUCKLEN B #2-12 - Wellbore #1 - Wellbor	12,319.26	6,620.23	3,337.09	3,194.83	23.457	CC, ES, SF
ABDN VERT CLEMONS #32-3 - Wellbore #1 - Design #1	10,948.26	6,802.41	1,794.35	1,553.50	7.450	CC
ABDN VERT CLEMONS #32-3 - Wellbore #1 - Design #1	11,000.00	6,801.94	1,795.10	1,552.93	7.413	ES
ABDN VERT CLEMONS #32-3 - Wellbore #1 - Design #1	11,300.00	6,799.23	1,828.50	1,578.61	7.317	SF
EXIST HZ JENKINS #B11-79-1HCM - Wellbore #1 - Wel	12,319.26	14,173.00	818.79	660.06	5.158	CC, ES, SF
EXIST HZ LEEROY #B11-79HNM - Wellbore #1 - Wellbo	12,319.26	14,095.00	598.51	444.37	3.883	CC, ES, SF
EXIST HZ LONEWOLF B02-65HC - ORIGINAL WELLBO	12,319.26	6,536.00	2,636.08	2,483.10	17.232	CC, ES, SF
EXIST HZ LONEWOLF B02-65HC - SIDETRACK - SIDE	12,319.26	6,536.00	2,636.06	2,483.09	17.232	CC, ES, SF
EXIST HZ WOLFPACK B02-62-1HN - Wellbore #1 - Wel	300.00	249.00	4,399.77	4,398.99	5,584.053	CC, ES
EXIST HZ WOLFPACK B02-62-1HN - Wellbore #1 - Wel	12,319.26	5,955.00	4,621.65	4,470.58	30.593	SF
EXIST HZ WOLFPACK B02-63-1HN - Wellbore #1 - Wel	12,319.26	6,426.73	4,187.26	4,034.12	27.343	CC, ES, SF
EXIST HZ WOLFPACK B02-64-1HN - Wellbore #1 - Wel	12,319.26	6,403.00	3,539.10	3,386.88	23.250	CC, ES, SF
EXIST HZ WOLFPACK B02-65-1HN - Wellbore #1 - Wel	12,319.26	6,298.00	2,961.07	2,810.33	19.644	CC, ES, SF
EXIST HZ WOLFPACK B02-65HN - Wellbore #1 - Wellb	12,319.26	6,346.00	2,719.47	2,568.55	18.019	CC, ES, SF
EXIST HZ WOLFPACK B02-66-1HN - Wellbore #1 - Wel	12,319.26	6,441.00	2,288.33	2,137.73	15.195	CC, ES, SF
EXIST VERT ANNIE #B 3-10 - Wellbore #1 - Design #1	300.00	245.00	2,096.95	2,092.17	438.026	CC
EXIST VERT ANNIE #B 3-10 - Wellbore #1 - Design #1	400.00	344.97	2,098.90	2,091.83	296.932	ES
EXIST VERT ANNIE #B 3-10 - Wellbore #1 - Design #1	11,600.00	6,783.52	3,109.71	2,852.25	12.078	SF
EXIST VERT ANNIE B #03-23 - Wellbore #1 - Wellbore #	100.00	29.87	3,063.36	3,063.25	10,000.000	CC
EXIST VERT ANNIE B #03-23 - Wellbore #1 - Wellbore #	300.00	218.17	3,063.78	3,063.00	3,910.188	ES
EXIST VERT ANNIE B #03-23 - Wellbore #1 - Wellbore #	12,319.26	6,650.00	3,831.22	3,688.84	26.909	SF
EXIST VERT BUCKLEN #1-2 - Wellbore #1 - Wellbore #	12,319.26	6,725.00	4,659.04	4,516.64	32.718	CC, ES, SF
EXIST VERT CLEMONS #32-3 - Wellbore #1 - Wellbore	308.80	272.69	1,815.67	1,814.84	2,189.936	CC, ES
EXIST VERT CLEMONS #32-3 - Wellbore #1 - Wellbore	11,900.00	6,700.00	2,274.71	2,143.58	17.346	SF
EXIST VERT CLEMONS #42-3 - Wellbore #1 - Wellbore	12,053.03	6,744.63	2,030.85	1,895.45	14.998	CC
EXIST VERT CLEMONS #42-3 - Wellbore #1 - Wellbore	12,100.00	6,743.83	2,031.40	1,894.74	14.865	ES
EXIST VERT CLEMONS #42-3 - Wellbore #1 - Wellbore	12,319.26	6,740.05	2,048.23	1,905.72	14.373	SF
EXIST VERT FLACK #5-3 - Wellbore #1 - Wellbore #1	2,040.80	1,866.28	810.99	798.39	64.344	CC
EXIST VERT FLACK #5-3 - Wellbore #1 - Wellbore #1	2,100.00	1,917.36	811.50	798.25	61.268	ES
EXIST VERT FLACK #5-3 - Wellbore #1 - Wellbore #1	10,400.00	6,700.00	2,869.27	2,777.25	31.183	SF
EXIST VERT MILLAGE #23-3 - Wellbore #1 - Design #1	300.00	245.00	1,498.79	1,494.00	313.077	CC
EXIST VERT MILLAGE #23-3 - Wellbore #1 - Design #1	400.00	344.97	1,500.19	1,493.12	212.175	ES
EXIST VERT MILLAGE #23-3 - Wellbore #1 - Design #1	10,400.00	6,794.35	3,130.80	2,903.97	13.803	SF
EXIST VERT MILLAGE PM B#3-14 - Wellbore #1 - Wellb	100.00	25.28	3,239.00	3,238.89	10,000.000	CC, ES
EXIST VERT MILLAGE PM B#3-14 - Wellbore #1 - Wellb	12,319.26	6,650.00	5,386.26	5,244.04	37.873	SF
EXIST VERT SCHOENLEBER #16-3 - Wellbore #1 - We	100.00	25.65	4,044.60	4,044.49	10,000.000	CC, ES
EXIST VERT SCHOENLEBER #16-3 - Wellbore #1 - We	12,319.26	6,616.46	4,323.12	4,180.39	30.289	SF
EXIST VERT SITZMAN #3-1 - Wellbore #1 - Wellbore #1	241.92	166.92	3,368.78	3,368.28	6,667.865	CC
EXIST VERT SITZMAN #3-1 - Wellbore #1 - Wellbore #1	300.00	211.16	3,368.92	3,368.27	5,173.893	ES
EXIST VERT SITZMAN #3-1 - Wellbore #1 - Wellbore #1	12,319.26	6,700.00	4,692.92	4,550.82	33.027	SF
EXIST VERT STOUT #6-3 - Wellbore #1 - Wellbore #1	100.00	37.87	757.13	757.01	6,174.701	CC
EXIST VERT STOUT #6-3 - Wellbore #1 - Wellbore #1	300.00	237.27	757.16	756.38	966.598	ES
EXIST VERT STOUT #6-3 - Wellbore #1 - Wellbore #1	11,100.00	6,650.00	2,332.83	2,223.10	21.259	SF
LIGHTNING 10N - ORIGINAL WELLBORE - PROPOSA	300.00	251.00	3,809.01	3,808.04	3,959.471	CC, ES
LIGHTNING 10N - ORIGINAL WELLBORE - PROPOSA	6,850.00	12,140.07	4,782.62	4,591.71	25.051	SF
LIGHTNING 11N - ORIGINAL WELLBORE - PROPOSAL	300.00	251.00	3,821.60	3,820.63	3,972.559	CC, ES
LIGHTNING 11N - ORIGINAL WELLBORE - PROPOSAL	7,250.00	11,743.26	4,979.49	4,799.89	27.725	SF
LIGHTNING 1N - ORIGINAL WELLBORE - PROPOSAL	7,000.00	12,586.70	2,473.98	2,283.93	13.017	SF
LIGHTNING 1N - ORIGINAL WELLBORE - PROPOSAL	7,300.00	12,424.75	2,451.80	2,267.77	13.323	ES

Company:	PDC ENERGY	**Local Co-ordinate Reference:**	Well THUNDER 1C
Project:	WELD COUNTY, COLORADO (TRUE)	**TVD Reference:**	KB-EST @ 4682.00usft
Reference Site:	SE NW SEC. 3 T5N R64W 6th P.M. (THUNDER)	**MD Reference:**	KB-EST @ 4682.00usft
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	THUNDER 1C	**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 #1	**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 SE SEC 3 T5N R64W 6th P.M. (LIGHTNING)						
LIGHTNING 1N - ORIGINAL WELLBORE - PROPOSAL	12,071.78	7,714.92	2,442.22	2,274.81	14.588	CC
LIGHTNING 2N - ORIGINAL WELLBORE - PROPOSAL	6,950.00	12,465.18	2,698.18	2,507.72	14.166	SF
LIGHTNING 2N - ORIGINAL WELLBORE - PROPOSAL	7,200.00	12,352.46	2,680.89	2,494.62	14.392	ES
LIGHTNING 2N - ORIGINAL WELLBORE - PROPOSAL	12,055.29	7,595.59	2,673.14	2,506.78	16.068	CC
LIGHTNING 3N - ORIGINAL WELLBORE - PROPOSAL	6,950.00	12,459.57	2,953.74	2,763.33	15.513	SF
LIGHTNING 3N - ORIGINAL WELLBORE - PROPOSAL	12,152.25	7,503.01	2,899.45	2,730.82	17.194	CC
LIGHTNING 3N - ORIGINAL WELLBORE - PROPOSAL	12,319.26	7,365.13	2,900.34	2,727.69	16.799	ES
LIGHTNING 4N - ORIGINAL WELLBORE - PROPOSAL	6,900.00	12,336.38	3,189.18	2,998.81	16.753	SF
LIGHTNING 4N - ORIGINAL WELLBORE - PROPOSAL	12,134.07	7,395.07	3,130.85	2,963.11	18.665	CC
LIGHTNING 4N - ORIGINAL WELLBORE - PROPOSAL	12,319.26	7,250.00	3,132.21	2,960.08	18.196	ES
LIGHTNING 5N - ORIGINAL WELLBORE - PROPOSAL	6,900.00	12,329.68	3,435.73	3,245.60	18.070	SF
LIGHTNING 5N - ORIGINAL WELLBORE - PROPOSAL	11,830.83	7,700.00	3,360.67	3,198.57	20.732	CC
LIGHTNING 5N - ORIGINAL WELLBORE - PROPOSAL	12,319.26	7,228.98	3,362.66	3,190.29	19.509	ES
LIGHTNING 6N - ORIGINAL WELLBORE - PROPOSAL	6,900.00	12,230.02	3,670.26	3,479.62	19.253	SF
LIGHTNING 6N - ORIGINAL WELLBORE - PROPOSAL	12,144.42	7,283.65	3,611.04	3,443.28	21.525	CC
LIGHTNING 6N - ORIGINAL WELLBORE - PROPOSAL	12,319.26	7,150.00	3,612.13	3,440.24	21.015	ES
LIGHTNING 7N - ORIGINAL WELLBORE - PROPOSAL	300.00	251.00	3,771.34	3,770.38	3,920.318	CC
LIGHTNING 7N - ORIGINAL WELLBORE - PROPOSAL	6,900.00	12,246.20	3,905.33	3,714.12	20.424	SF
LIGHTNING 7N - ORIGINAL WELLBORE - PROPOSAL	12,319.26	7,150.00	3,855.94	3,683.83	22.404	ES
LIGHTNING 8N - ORIGINAL WELLBORE - PROPOSAL	300.00	251.00	3,783.89	3,782.93	3,933.366	CC, ES
LIGHTNING 8N - ORIGINAL WELLBORE - PROPOSAL	6,900.00	12,191.75	4,349.97	4,158.20	22.683	SF
LIGHTNING 9N - ORIGINAL WELLBORE - PROPOSAL	300.00	251.00	3,796.45	3,795.49	3,946.417	CC, ES
LIGHTNING 9N - ORIGINAL WELLBORE - PROPOSAL	6,850.00	12,127.72	4,562.05	4,369.58	23.703	SF

Offset Design NW NE SEC. 5 T5N R64W 6th P.M. - EXIST VERT FRENCH 41-4 - Wellbore #1 - Wellbore #1

Survey Program: 100-GYD_CT

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	-67.84	970.17	-2,382.44	2,573.10				
100.00	100.00	25.85	25.85	0.09	0.02	-67.84	970.18	-2,382.52	2,572.51	2,572.41	0.11	N/A	
200.00	200.00	100.00	99.99	0.31	0.09	-67.85	970.34	-2,383.52	2,573.78	2,573.38	0.40	6,503.135	
300.00	300.00	184.06	184.04	0.54	0.21	-67.85	970.80	-2,385.29	2,575.88	2,575.14	0.74	3,480.379	
400.00	399.97	262.22	262.16	0.76	0.29	-14.07	971.66	-2,387.06	2,576.51	2,575.47	1.04	2,472.914	
500.00	499.79	336.76	336.65	0.99	0.35	-14.09	973.13	-2,389.29	2,574.31	2,572.98	1.33	1,928.758	
600.00	599.31	414.48	414.29	1.24	0.41	-14.15	975.04	-2,392.29	2,569.28	2,567.65	1.63	1,574.468	
700.00	698.36	508.19	507.89	1.53	0.47	-14.24	977.54	-2,396.32	2,560.95	2,559.01	1.94	1,317.009	
800.00	796.79	606.87	606.44	1.88	0.53	-14.39	980.27	-2,400.66	2,548.97	2,546.70	2.27	1,121.561	
900.00	894.46	710.70	710.13	2.29	0.58	-14.58	983.12	-2,405.11	2,533.12	2,530.50	2.62	967.929	
1,000.00	991.22	809.63	808.94	2.77	0.63	-14.83	985.61	-2,409.31	2,513.41	2,510.44	2.97	845.158	
1,100.00	1,086.91	901.79	900.98	3.32	0.67	-15.12	987.74	-2,413.38	2,490.10	2,486.76	3.34	744.875	
1,200.00	1,181.38	998.76	997.83	3.95	0.72	-15.47	989.96	-2,417.76	2,463.22	2,459.48	3.73	659.657	
1,300.00	1,274.50	1,099.85	1,098.80	4.66	0.76	-15.90	992.30	-2,422.15	2,432.59	2,428.44	4.15	585.598	
1,400.00	1,366.11	1,205.60	1,204.44	5.45	0.81	-16.41	994.58	-2,426.35	2,398.06	2,393.45	4.61	520.489	
1,500.00	1,456.08	1,298.15	1,296.91	6.33	0.85	-16.97	996.44	-2,429.82	2,359.83	2,354.74	5.09	464.009	
1,600.00	1,544.26	1,399.35	1,398.02	7.30	0.89	-17.64	998.57	-2,433.31	2,317.98	2,312.37	5.61	413.549	
1,611.67	1,554.44	1,412.01	1,410.67	7.41	0.89	-17.73	998.84	-2,433.71	2,312.84	2,307.17	5.67	407.940	
1,700.00	1,631.30	1,506.47	1,505.08	8.32	0.93	-18.11	1,000.69	-2,436.30	2,273.53	2,267.40	6.13	370.684	
1,800.00	1,718.33	1,597.24	1,595.81	9.35	0.97	-18.49	1,002.13	-2,438.53	2,228.76	2,222.10	6.66	334.523	

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