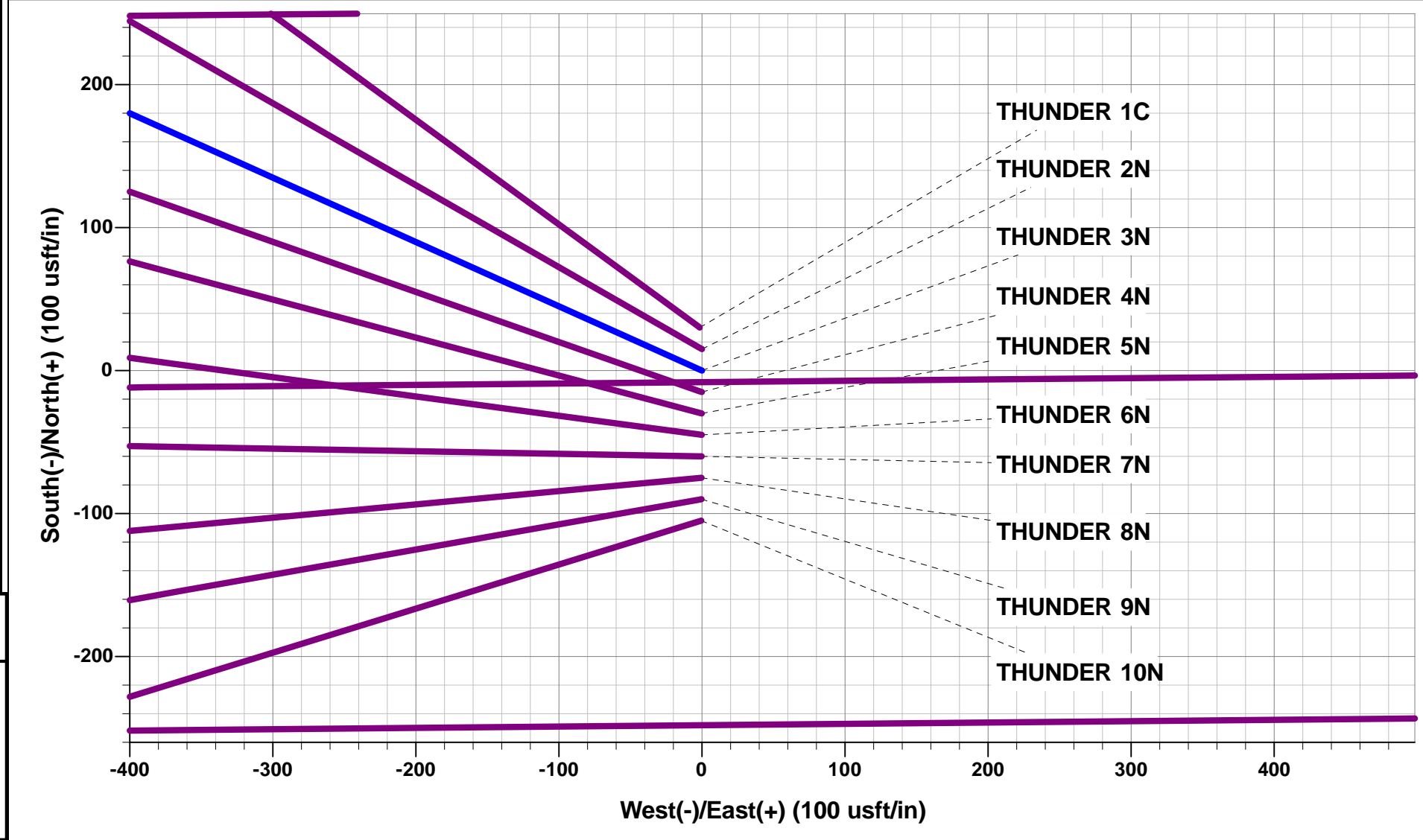




Project: WELD COUNTY, COLORADO (TRUE)  
Site: SE NW SEC. 3 T5N R64W 6th P.M. (THUNDER)  
Well: THUNDER 3N  
Wellbore: ORIGINAL WELLBORE  
Design: PROPOSAL #2

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: 1697ft FNL & 1591ft FWL of Sec 3	
500.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)	
1930.86	1998.22	29.96	294.22	157.08	-349.22	-294.57	382.92	EOB TO 29.96° INC	
4524.99	4992.60	29.96	294.22	770.58	-1713.18	-1445.10	1878.50	END OF TANGENT	
5955.85	6490.83	0.00	0.00	927.66	-2062.40	-1739.67	2261.43	EOD TO VERTICAL	
6055.85	6590.83	0.00	0.00	927.66	-2062.40	-1739.67	2261.43	KOP (8°/100ft BUR)	
6772.00	7723.70	90.63	89.47	934.37	-1338.36	-1040.14	2985.50	EP: 750ft FNL & 250ft FWL of Sec 3	
6718.11	12597.48	90.64	89.46	979.83	3534.91	3668.19	7858.98	BHL: 750ft FNL & 150ft FEL of Sec 3	

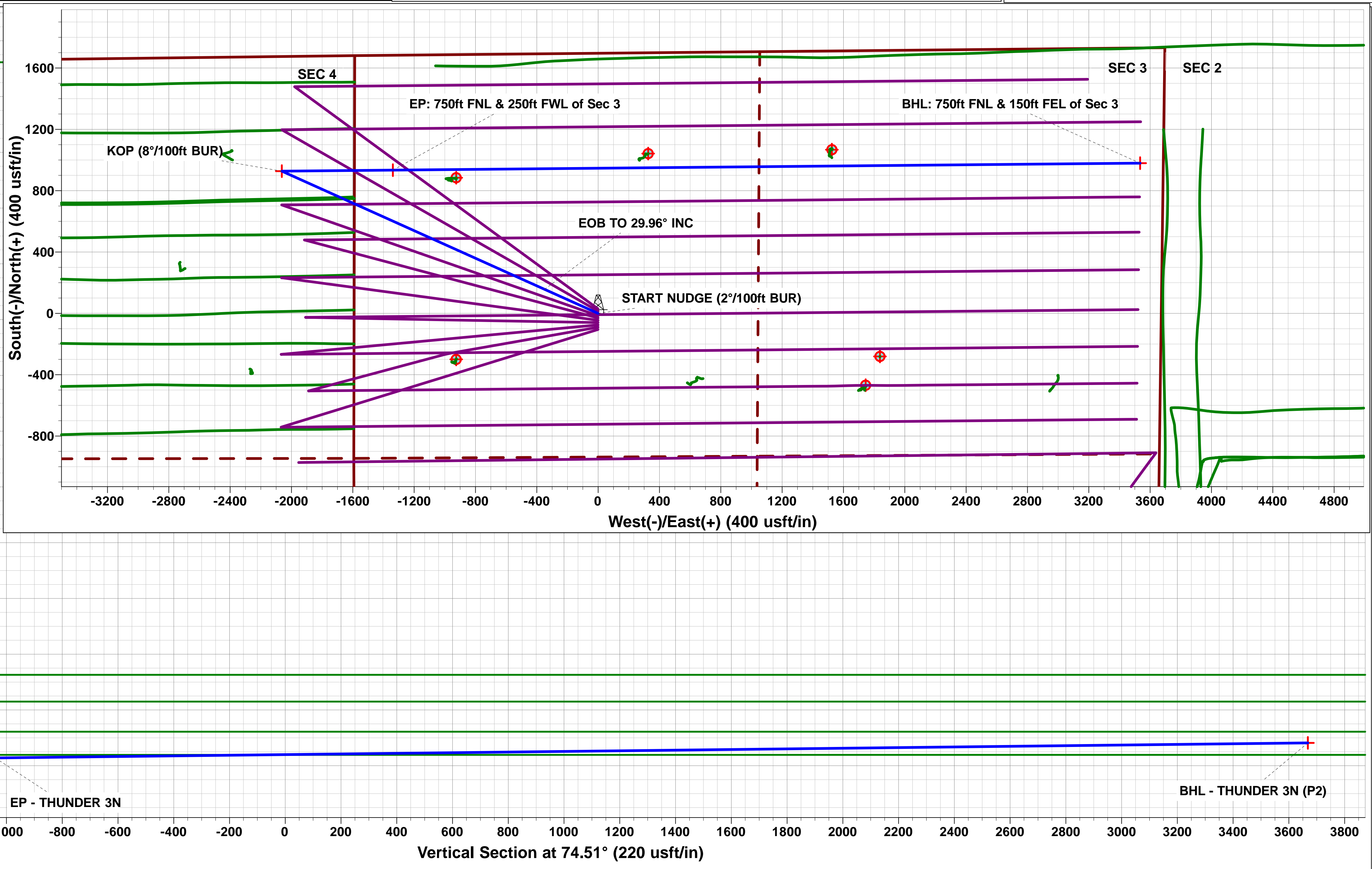
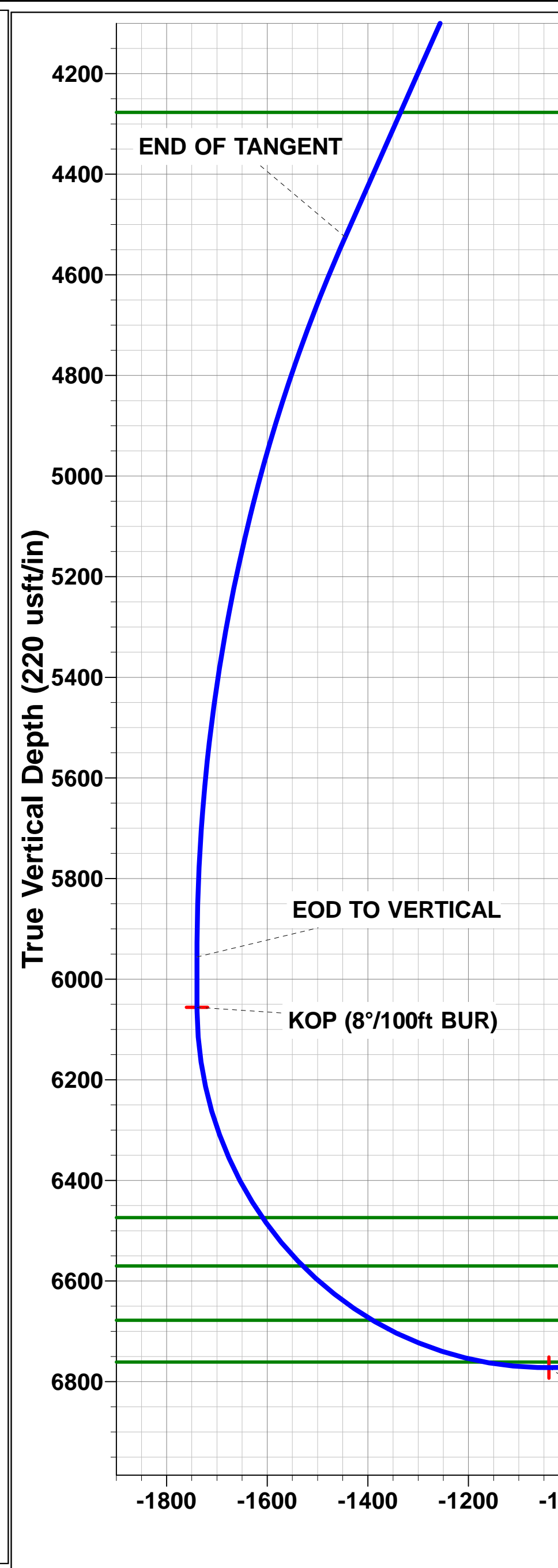
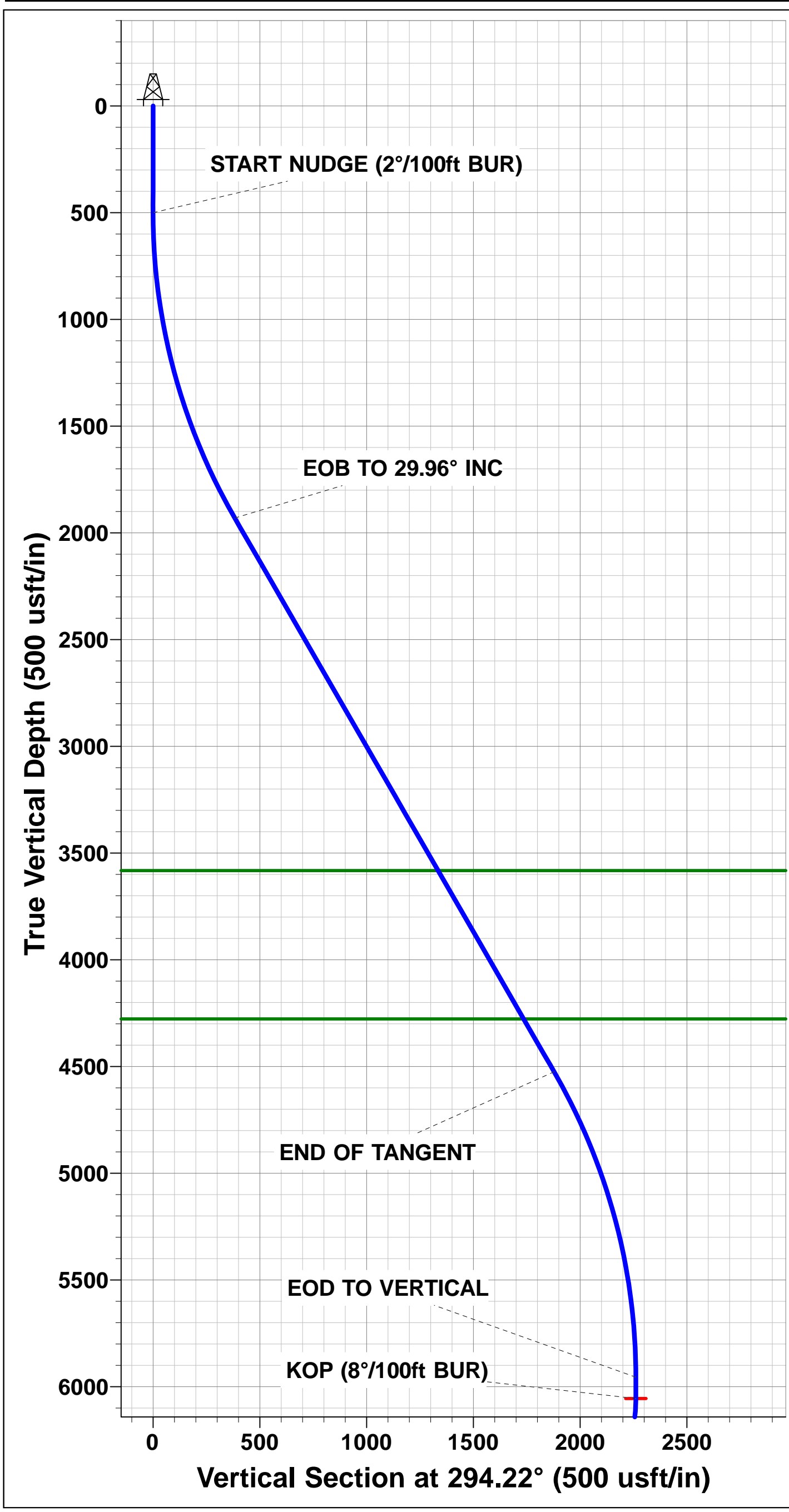
WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - THUNDER 3N	6055.85	927.66	-2062.40	40.433412	-104.547456
EP - THUNDER 3N	6772.00	934.37	-1338.36	40.433430	-104.544855
BHL - THUNDER 3N (P2)	6718.11	979.83	3534.91	40.433554	-104.527349



PROPOSED LOCAL COORDINATES:  
SHL: 1697ft FNL & 1591ft FWL of Sec 3  
EP: 750ft FNL & 250ft FWL of Sec 3  
BHL: 750ft FNL & 150ft 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 3N**

**ORIGINAL WELLBORE  
PROPOSAL #2**

## **Anticollision Report**

**04 July, 2018**



<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Well THUNDER 3N
<b>Project:</b>	WELD COUNTY, COLORADO (TRUE)	<b>TVD Reference:</b>	KB-EST @ 4682.00usft
<b>Reference Site:</b>	SE NW SEC. 3 T5N R64W 6th P.M. (THUNDER)	<b>MD Reference:</b>	KB-EST @ 4682.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	THUNDER 3N	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	ORIGINAL WELLBORE	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	PROPOSAL #2	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	PROPOSAL #2		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	MD + Stations Interval 100.00usft	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 10,000.00 usft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma	<b>Casing Method:</b>	Not applied

<b>Survey Tool Program</b>	<b>Date</b>	04/07/2018		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	12,597.48	PROPOSAL #2 (ORIGINAL WELLBORE)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
NW NE SEC. 5 T5N R64W 6th P.M.						
EXIST VERT FRENCH 41-4 - Wellbore #1 - Wellbore #1	6,481.40	5,887.98	353.89	333.25	17.148	CC
EXIST VERT FRENCH 41-4 - Wellbore #1 - Wellbore #1	6,490.83	5,897.58	353.90	303.49	7.020	ES
EXIST VERT FRENCH 41-4 - Wellbore #1 - Wellbore #1	6,590.83	5,997.61	354.17	303.70	7.018	SF
EXIST VERT FRENCH 5 - Wellbore #1 - Wellbore #1	6,600.00	6,014.56	897.15	850.39	19.186	ES, SF
EXIST VERT FRENCH 5 - Wellbore #1 - Wellbore #1	6,602.05	6,016.57	897.15	850.39	19.187	CC
SNOWMASS 10N - ORIGINAL WELLBORE - ORIGINAL	7,460.14	15,405.00	1,683.93	1,416.07	6.287	CC, ES, SF
SNOWMASS 1C - ORIGINAL WELLBORE - ORIGINAL	7,507.96	14,808.00	586.45	328.56	2.274	CC, ES, SF
SNOWMASS 2N - ORIGINAL WELLBORE - ORIGINAL	7,477.64	14,712.00	274.10	12.04	1.046	Level 2, CC, ES, SF
SNOWMASS 3N - ORIGINAL WELLBORE - ORIGINAL	7,464.30	15,107.00	174.76	-92.54	0.654	Level 1, CC, ES, SF
SNOWMASS 4N - ORIGINAL WELLBORE - ORIGINAL	7,474.59	15,107.00	184.05	-84.06	0.686	Level 1, CC, ES, SF
SNOWMASS 5N - ORIGINAL WELLBORE - ORIGINAL	7,436.86	15,245.61	405.38	134.71	1.498	Level 3, CC
SNOWMASS 5N - ORIGINAL WELLBORE - ORIGINAL	7,450.00	15,255.00	405.41	134.67	1.497	Level 3, ES, SF
SNOWMASS 6N - ORIGINAL WELLBORE - ORIGINAL	7,465.04	15,131.00	680.65	413.10	2.544	CC, ES, SF
SNOWMASS 7N - ORIGINAL WELLBORE - ORIGINAL	7,437.79	15,335.27	910.18	638.42	3.349	CC
SNOWMASS 7N - ORIGINAL WELLBORE - ORIGINAL	7,450.00	15,340.00	910.22	638.32	3.348	ES, SF
SNOWMASS 8N - ORIGINAL WELLBORE - ORIGINAL	7,427.94	15,208.64	1,130.57	863.12	4.227	CC
SNOWMASS 8N - ORIGINAL WELLBORE - ORIGINAL	7,450.00	15,228.84	1,130.62	862.61	4.219	ES
SNOWMASS 8N - ORIGINAL WELLBORE - ORIGINAL	7,500.00	15,247.00	1,131.36	862.77	4.212	SF
SNOWMASS 9N - ORIGINAL WELLBORE - ORIGINAL	7,434.19	15,323.00	1,393.11	1,123.50	5.167	CC, ES
SNOWMASS 9N - ORIGINAL WELLBORE - ORIGINAL	7,450.00	15,323.00	1,393.19	1,123.53	5.166	SF

<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Well THUNDER 3N
<b>Project:</b>	WELD COUNTY, COLORADO (TRUE)	<b>TVD Reference:</b>	KB-EST @ 4682.00usft
<b>Reference Site:</b>	SE NW SEC. 3 T5N R64W 6th P.M. (THUNDER)	<b>MD Reference:</b>	KB-EST @ 4682.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	THUNDER 3N	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	ORIGINAL WELLBORE	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	PROPOSAL #2	<b>Offset TVD Reference:</b>	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	5,053.32	4,512.50	1,274.85	1,231.29	29.264	CC
ABDN VERT FRENCH #1 - Wellbore #1 - Wellbore #1	5,100.00	4,553.92	1,275.04	1,231.05	28.983	ES
ABDN VERT FRENCH #1 - Wellbore #1 - Wellbore #1	6,650.00	6,042.01	1,335.89	1,286.92	27.282	SF
EXIST HZ LUCCI STATE #B03-69HNL - Wellbore #1 - W	8,000.00	16,989.60	679.37	336.92	1.984	SF
EXIST HZ LUCCI STATE #B03-69HNL - Wellbore #1 - W	8,200.00	16,801.45	675.27	335.87	1.990	ES
EXIST HZ LUCCI STATE #B03-69HNL - Wellbore #1 - W	8,332.26	16,676.15	674.56	336.97	1.998	CC
EXIST VERT CLEMONS #2-3 - Wellbore #1 - Wellbore #	10,587.54	6,700.00	54.42	-47.78	0.533	Level 1, CC, ES, SF
EXIST VERT GRANADOS #4-3 - Wellbore #1 - Wellbore	8,106.66	6,700.00	77.45	28.18	1.572	CC, ES, SF
EXIST VERT STOUT #3-3 - Wellbore #1 - Wellbore #1	9,334.68	6,700.00	51.12	-21.20	0.707	Level 1, CC, ES, SF
THUNDER 10N - ORIGINAL WELLBORE - PROPOSAL	300.00	300.00	104.96	103.89	97.898	CC, ES
THUNDER 10N - ORIGINAL WELLBORE - PROPOSAL	12,597.48	12,456.15	1,671.34	1,367.31	5.497	SF
THUNDER 1C - ORIGINAL WELLBORE - PROPOSAL #	300.00	300.00	30.21	29.14	28.181	CC, ES
THUNDER 1C - ORIGINAL WELLBORE - PROPOSAL #	12,300.00	12,319.26	562.30	282.39	2.009	SF
THUNDER 2N - ORIGINAL WELLBORE - PROPOSAL #	400.00	400.00	15.01	13.49	9.864	CC
THUNDER 2N - ORIGINAL WELLBORE - PROPOSAL #	12,597.48	12,568.71	280.35	-17.59	0.941	Level 1, ES, SF
THUNDER 4N - ORIGINAL WELLBORE - PROPOSAL #	500.00	500.00	14.97	13.00	7.596	CC
THUNDER 4N - ORIGINAL WELLBORE - PROPOSAL #	12,597.48	12,508.32	230.97	-61.68	0.789	Level 1, ES, SF
THUNDER 5N - ORIGINAL WELLBORE - PROPOSAL #	500.00	500.00	29.98	28.01	15.211	CC, ES
THUNDER 5N - ORIGINAL WELLBORE - PROPOSAL #	12,597.48	12,339.97	450.05	148.42	1.492	Level 3, SF
THUNDER 6N - ORIGINAL WELLBORE - PROPOSAL #	500.00	500.00	44.96	42.99	22.807	CC, ES
THUNDER 6N - ORIGINAL WELLBORE - PROPOSAL #	12,597.48	12,476.90	698.06	392.59	2.285	SF
THUNDER 7N - ORIGINAL WELLBORE - PROPOSAL #	500.00	500.00	59.97	58.00	30.421	CC, ES
THUNDER 7N - ORIGINAL WELLBORE - PROPOSAL #	12,597.48	12,312.28	955.05	654.11	3.174	SF
THUNDER 8N - ORIGINAL WELLBORE - PROPOSAL #	500.00	500.00	74.98	73.01	38.036	CC, ES
THUNDER 8N - ORIGINAL WELLBORE - PROPOSAL #	12,597.48	12,443.17	1,196.81	891.77	3.923	SF
THUNDER 9N - ORIGINAL WELLBORE - PROPOSAL #	400.00	400.00	89.95	88.43	59.113	CC
THUNDER 9N - ORIGINAL WELLBORE - PROPOSAL #	500.00	499.40	90.27	88.32	46.150	ES
THUNDER 9N - ORIGINAL WELLBORE - PROPOSAL #	12,597.48	12,254.54	1,435.06	1,136.43	4.805	SF



<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Well THUNDER 3N
<b>Project:</b>	WELD COUNTY, COLORADO (TRUE)	<b>TVD Reference:</b>	KB-EST @ 4682.00usft
<b>Reference Site:</b>	SE NW SEC. 3 T5N R64W 6th P.M. (THUNDER)	<b>MD Reference:</b>	KB-EST @ 4682.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	THUNDER 3N	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	ORIGINAL WELLBORE	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	PROPOSAL #2	<b>Offset TVD Reference:</b>	Offset Datum

## Summary

Site Name	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	12,119.09	6,654.04	2,780.51	2,638.16	19.532	CC
ABDN VERT ANNIE #B 3-09 - Wellbore #1 - Wellbore #1	12,200.00	6,654.60	2,781.69	2,637.17	19.248	ES
ABDN VERT ANNIE #B 3-09 - Wellbore #1 - Wellbore #1	12,597.48	6,657.38	2,821.37	2,666.18	18.181	SF
ABDN VERT BUCKLEN #B 2-12 - Wellbore #1 - Wellbor	12,597.48	6,545.90	2,706.82	2,551.83	17.465	CC, ES, SF
ABDN VERT CLEMONS #32-3 - Wellbore #1 - Design #1	10,889.10	6,695.06	1,244.51	1,002.15	5.135	CC
ABDN VERT CLEMONS #32-3 - Wellbore #1 - Design #1	10,900.00	6,694.94	1,244.55	1,001.92	5.129	ES
ABDN VERT CLEMONS #32-3 - Wellbore #1 - Design #1	11,100.00	6,692.72	1,262.25	1,014.51	5.095	SF
EXIST HZ JENKINS #B11-79-1HCM - Wellbore #1 - Wel	12,597.48	13,929.61	414.52	303.01	3.717	CC, ES, SF
EXIST HZ LEEROY #B11-79HNM - Wellbore #1 - Wellbo	12,597.48	13,886.35	173.13	51.39	1.422	Level 3, CC, ES, SF
EXIST HZ LONEWOLF B02-65HC - ORIGINAL WELLBO	12,597.48	6,536.00	2,002.72	1,836.65	12.059	CC, ES, SF
EXIST HZ LONEWOLF B02-65HC - SIDETRACK - SIDE	12,597.48	6,536.00	2,002.70	1,836.63	12.059	CC, ES, SF
EXIST HZ WOLFPACK B02-62-1HN - Wellbore #1 - Wel	12,597.48	5,955.00	4,035.82	3,872.07	24.647	CC, ES, SF
EXIST HZ WOLFPACK B02-63-1HN - Wellbore #1 - Wel	12,597.48	6,470.81	3,591.42	3,425.00	21.581	CC, ES, SF
EXIST HZ WOLFPACK B02-64-1HN - Wellbore #1 - Wel	12,597.48	6,448.00	2,933.42	2,767.76	17.708	CC, ES, SF
EXIST HZ WOLFPACK B02-65-1HN - Wellbore #1 - Wel	12,597.48	6,332.56	2,331.75	2,167.75	14.219	CC, ES, SF
EXIST HZ WOLFPACK B02-65HN - Wellbore #1 - Wellb	12,597.48	6,454.48	2,078.64	1,913.06	12.554	CC, ES, SF
EXIST HZ WOLFPACK B02-66-1HN - Wellbore #1 - Wel	12,597.48	6,488.00	1,664.03	1,499.98	10.144	CC, ES, SF
EXIST VERT ANNIE #B 3-10 - Wellbore #1 - Design #1	500.00	445.00	2,074.89	2,065.55	222.213	CC
EXIST VERT ANNIE #B 3-10 - Wellbore #1 - Design #1	600.00	544.98	2,076.53	2,064.96	179.387	ES
EXIST VERT ANNIE #B 3-10 - Wellbore #1 - Design #1	11,200.00	6,678.62	2,483.69	2,233.61	9.932	SF
EXIST VERT ANNIE B #03-23 - Wellbore #1 - Wellbore #	100.00	29.89	3,041.13	3,041.01	10,000.000	CC
EXIST VERT ANNIE B #03-23 - Wellbore #1 - Wellbore #	11,300.00	6,650.00	3,128.50	3,007.76	25.911	ES
EXIST VERT ANNIE B #03-23 - Wellbore #1 - Wellbore #	12,597.48	6,650.00	3,429.52	3,274.32	22.097	SF
EXIST VERT BUCKLEN #1-2 - Wellbore #1 - Wellbore #	12,597.48	6,657.08	4,058.34	3,903.25	26.169	CC, ES, SF
EXIST VERT CLEMONS #32-3 - Wellbore #1 - Wellbore	10,788.47	6,685.80	1,464.42	1,356.81	13.609	CC
EXIST VERT CLEMONS #32-3 - Wellbore #1 - Wellbore	10,800.00	6,685.78	1,464.46	1,356.56	13.572	ES
EXIST VERT CLEMONS #32-3 - Wellbore #1 - Wellbore	11,300.00	6,684.69	1,551.19	1,430.37	12.839	SF
EXIST VERT CLEMONS #42-3 - Wellbore #1 - Wellbore	11,994.57	6,651.56	1,478.82	1,339.77	10.635	CC
EXIST VERT CLEMONS #42-3 - Wellbore #1 - Wellbore	12,000.00	6,651.47	1,478.83	1,339.64	10.624	ES
EXIST VERT CLEMONS #42-3 - Wellbore #1 - Wellbore	12,400.00	6,644.27	1,533.38	1,383.51	10.232	SF
EXIST VERT FLACK #5-3 - Wellbore #1 - Wellbore #1	2,653.30	2,435.99	657.92	641.16	39.271	CC
EXIST VERT FLACK #5-3 - Wellbore #1 - Wellbore #1	2,700.00	2,476.63	658.33	641.05	38.094	ES
EXIST VERT FLACK #5-3 - Wellbore #1 - Wellbore #1	8,700.00	6,700.00	1,390.31	1,330.86	23.387	SF
EXIST VERT MILLAGE #23-3 - Wellbore #1 - Design #1	500.00	445.00	1,468.77	1,459.44	157.300	CC
EXIST VERT MILLAGE #23-3 - Wellbore #1 - Design #1	600.00	544.98	1,469.74	1,458.16	126.925	ES
EXIST VERT MILLAGE #23-3 - Wellbore #1 - Design #1	10,000.00	6,691.90	2,501.87	2,281.76	11.367	SF
EXIST VERT MILLAGE PM B#3-14 - Wellbore #1 - Wellb	100.00	25.34	3,209.03	3,208.92	10,000.000	CC, ES
EXIST VERT MILLAGE PM B#3-14 - Wellbore #1 - Wellb	12,597.48	6,650.00	5,108.58	4,953.57	32.957	SF
EXIST VERT SCHOENLEBER #16-3 - Wellbore #1 - We	12,045.33	6,537.98	3,764.53	3,623.89	26.767	CC
EXIST VERT SCHOENLEBER #16-3 - Wellbore #1 - We	12,100.00	6,538.82	3,764.93	3,622.83	26.495	ES
EXIST VERT SCHOENLEBER #16-3 - Wellbore #1 - We	12,597.48	6,546.47	3,804.80	3,649.36	24.477	SF
EXIST VERT SITZMAN #3-1 - Wellbore #1 - Wellbore #1	241.94	166.94	3,341.80	3,341.30	6,619.818	CC
EXIST VERT SITZMAN #3-1 - Wellbore #1 - Wellbore #1	516.72	457.51	3,341.97	3,340.65	2,536.190	ES
EXIST VERT SITZMAN #3-1 - Wellbore #1 - Wellbore #1	12,597.48	6,693.20	4,317.46	4,162.62	27.884	SF
EXIST VERT STOUT #6-3 - Wellbore #1 - Wellbore #1	100.00	37.83	737.04	736.92	6,006.860	CC
EXIST VERT STOUT #6-3 - Wellbore #1 - Wellbore #1	300.00	237.23	737.09	736.31	939.727	ES
EXIST VERT STOUT #6-3 - Wellbore #1 - Wellbore #1	10,300.00	6,650.00	1,490.11	1,395.12	15.687	SF
LIGHTNING 10N - ORIGINAL WELLBORE - PROPOSA	431.97	382.97	3,782.99	3,781.43	2,432.377	CC
LIGHTNING 10N - ORIGINAL WELLBORE - PROPOSA	500.00	428.67	3,783.14	3,781.33	2,093.151	ES
LIGHTNING 10N - ORIGINAL WELLBORE - PROPOSA	6,900.00	12,163.32	4,226.90	4,034.03	21.915	SF
LIGHTNING 11N - ORIGINAL WELLBORE - PROPOSAL	331.97	282.97	3,795.55	3,794.44	3,432.617	CC
LIGHTNING 11N - ORIGINAL WELLBORE - PROPOSAL	400.00	326.68	3,795.71	3,794.36	2,804.661	ES

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

## Anticollision Report



<b>Company:</b>	PDC ENERGY	<b>Local Co-ordinate Reference:</b>	Well THUNDER 3N
<b>Project:</b>	WELD COUNTY, COLORADO (TRUE)	<b>TVD Reference:</b>	KB-EST @ 4682.00usft
<b>Reference Site:</b>	SE NW SEC. 3 T5N R64W 6th P.M. (THUNDER)	<b>MD Reference:</b>	KB-EST @ 4682.00usft
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	THUNDER 3N	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	ORIGINAL WELLBORE	<b>Database:</b>	EDM 5000.1 Single User Db
<b>Reference Design:</b>	PROPOSAL #2	<b>Offset TVD Reference:</b>	Offset Datum

## Summary

Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
SW SE SEC 3 T5N R64W 6th P.M. (LIGHTNING)						
LIGHTNING 11N - ORIGINAL WELLBORE - PROPOSAL	12,597.48	6,738.98	4,423.45	4,239.14	24.000	SF
LIGHTNING 1N - ORIGINAL WELLBORE - PROPOSAL	6,950.00	12,635.05	1,933.00	1,740.14	10.023	SF
LIGHTNING 1N - ORIGINAL WELLBORE - PROPOSAL	12,202.84	7,519.67	1,890.59	1,714.60	10.742	CC
LIGHTNING 1N - ORIGINAL WELLBORE - PROPOSAL	12,400.00	7,353.33	1,892.61	1,711.66	10.459	ES
LIGHTNING 2N - ORIGINAL WELLBORE - PROPOSAL	6,950.00	12,497.42	2,148.21	1,955.46	11.145	SF
LIGHTNING 2N - ORIGINAL WELLBORE - PROPOSAL	12,036.95	7,553.60	2,119.31	1,947.86	12.361	CC
LIGHTNING 2N - ORIGINAL WELLBORE - PROPOSAL	12,300.00	7,323.59	2,121.29	1,943.63	11.940	ES
LIGHTNING 3N - ORIGINAL WELLBORE - PROPOSAL	6,950.00	12,493.91	2,404.43	2,211.70	12.476	SF
LIGHTNING 3N - ORIGINAL WELLBORE - PROPOSAL	12,249.55	7,338.20	2,347.32	2,170.93	13.307	CC
LIGHTNING 3N - ORIGINAL WELLBORE - PROPOSAL	12,400.00	7,217.62	2,348.59	2,168.31	13.027	ES
LIGHTNING 4N - ORIGINAL WELLBORE - PROPOSAL	6,900.00	12,380.23	2,638.90	2,445.80	13.666	SF
LIGHTNING 4N - ORIGINAL WELLBORE - PROPOSAL	12,162.28	7,304.05	2,577.07	2,403.30	14.831	CC
LIGHTNING 4N - ORIGINAL WELLBORE - PROPOSAL	12,400.00	7,118.30	2,579.77	2,400.07	14.356	ES
LIGHTNING 5N - ORIGINAL WELLBORE - PROPOSAL	6,900.00	12,376.01	2,885.94	2,693.01	14.959	SF
LIGHTNING 5N - ORIGINAL WELLBORE - PROPOSAL	12,286.52	7,170.75	2,809.75	2,632.80	15.879	CC
LIGHTNING 5N - ORIGINAL WELLBORE - PROPOSAL	12,500.00	7,018.96	2,812.74	2,630.15	15.405	ES
LIGHTNING 6N - ORIGINAL WELLBORE - PROPOSAL	6,900.00	12,275.54	3,119.64	2,926.29	16.135	SF
LIGHTNING 6N - ORIGINAL WELLBORE - PROPOSAL	12,178.37	7,186.45	3,057.59	2,883.80	17.594	CC
LIGHTNING 6N - ORIGINAL WELLBORE - PROPOSAL	12,400.00	7,017.50	3,059.79	2,880.44	17.060	ES
LIGHTNING 7N - ORIGINAL WELLBORE - PROPOSAL	6,900.00	12,288.37	3,354.76	3,160.99	17.313	SF
LIGHTNING 7N - ORIGINAL WELLBORE - PROPOSAL	12,228.45	7,137.27	3,303.20	3,128.09	18.864	CC
LIGHTNING 7N - ORIGINAL WELLBORE - PROPOSAL	12,500.00	6,938.06	3,306.81	3,124.60	18.149	ES
LIGHTNING 8N - ORIGINAL WELLBORE - PROPOSAL	500.00	451.00	3,757.94	3,756.08	2,019.246	CC
LIGHTNING 8N - ORIGINAL WELLBORE - PROPOSAL	6,900.00	12,221.97	3,799.03	3,605.11	19.591	SF
LIGHTNING 8N - ORIGINAL WELLBORE - PROPOSAL	7,250.00	12,016.59	3,780.65	3,593.40	20.190	ES
LIGHTNING 9N - ORIGINAL WELLBORE - PROPOSAL	500.00	451.00	3,770.46	3,768.60	2,025.974	CC, ES
LIGHTNING 9N - ORIGINAL WELLBORE - PROPOSAL	6,900.00	12,149.70	4,006.77	3,812.39	20.613	SF

<b>Offset Design</b> NW NE SEC. 5 T5N R64W 6th P.M. - EXIST VERT FRENCH 41-4 - Wellbore #1 - Wellbore #1													Offset Site Error:	0.00 usft
Survey Program: 100-GYD_CT													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-67.24	1,000.34	-2,383.99	2,586.06					
100.00	100.00	25.83	25.83	0.09	0.02	-67.24	1,000.35	-2,384.06	2,585.47	2,585.36	0.11	N/A		
200.00	200.00	100.00	99.99	0.31	0.09	-67.24	1,000.52	-2,385.06	2,586.73	2,586.34	0.39	6,567.761		
300.00	300.00	183.82	183.79	0.54	0.21	-67.25	1,000.97	-2,386.83	2,588.83	2,588.09	0.74	3,506.479		
400.00	400.00	261.81	261.76	0.76	0.29	-67.25	1,001.82	-2,388.59	2,591.36	2,590.32	1.04	2,494.320		
500.00	500.00	336.12	336.02	0.99	0.35	-67.24	1,003.29	-2,390.81	2,594.88	2,593.56	1.32	1,963.428		
600.00	599.98	413.57	413.39	1.20	0.41	-1.44	1,005.19	-2,393.79	2,597.62	2,596.02	1.60	1,622.790		
700.00	699.84	507.53	507.23	1.42	0.47	-1.43	1,007.70	-2,397.83	2,597.38	2,595.51	1.87	1,385.828		
800.00	799.45	606.89	606.45	1.66	0.53	-1.41	1,010.44	-2,402.20	2,593.79	2,591.63	2.16	1,201.661		
900.00	898.70	711.96	711.39	1.93	0.58	-1.40	1,013.33	-2,406.71	2,586.60	2,584.14	2.45	1,054.016		
1,000.00	997.47	812.42	811.72	2.23	0.63	-1.40	1,015.85	-2,410.97	2,575.81	2,573.05	2.75	935.094		
1,100.00	1,095.62	906.73	905.92	2.59	0.67	-1.41	1,018.03	-2,415.15	2,561.64	2,558.58	3.06	837.662		
1,200.00	1,193.06	1,006.54	1,005.60	3.00	0.72	-1.42	1,020.32	-2,419.65	2,544.10	2,540.73	3.37	754.581		
1,300.00	1,289.64	1,111.86	1,110.79	3.47	0.77	-1.44	1,022.75	-2,424.19	2,522.96	2,519.27	3.70	682.128		
1,400.00	1,385.27	1,220.30	1,219.12	4.01	0.81	-1.46	1,025.05	-2,428.45	2,498.01	2,493.97	4.04	618.448		
1,500.00	1,479.82	1,319.06	1,317.80	4.63	0.86	-1.49	1,027.04	-2,432.14	2,469.49	2,465.10	4.38	563.170		

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