

MALLARD EXPLORATION

WELD COUNTY, COLORADO (NAD 83)

SE SW SEC. 35 T8N R60W 6th P.M.

CINNAMON TEAL 35-15HC

ORIGINAL WELLBORE

18 September, 2017

Plan: PROPOSAL #1





Project: WELD COUNTY, COLORADO (NAD 83)
Site: SE SW SEC. 35 T8N R60W 6th P.M.
Well: CINNAMON TEAL 35-15HC
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #1

ANNOTATIONS									
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSect	Dep	Annotation	
0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	SHL: 550ft FSL & 2199ft FWL of Sec 35	
200.0	200.0	0.00	0.00	0.0	0.0	0.0	0.0	START NUDGE (2.5°/100ft BUR)	
1263.3	1305.8	27.64	102.76	-57.8	255.2	76.7	261.6	EOB TO 27.64° INC	
4714.8	5201.9	27.64	102.76	-456.9	2018.2	606.6	2069.3	END OF TANGENT	
5778.1	6307.7	0.00	0.00	-514.7	2273.4	683.3	2330.9	EOD TO VERTICAL	
5878.1	6407.7	0.00	0.00	-514.7	2273.4	683.3	2330.9	KOP (10°/100ft BUR)	
6451.0	7307.6	90.00	1.38	58.1	2287.2	1187.2	2903.9	HZ LP: 600ft FSL & 790ft FEL of Sec 35	
6451.0	11416.6	90.00	1.38	4165.8	2386.2	4800.9	7012.8	BHL: 600ft FNL & 790ft FEL of Sec 35	

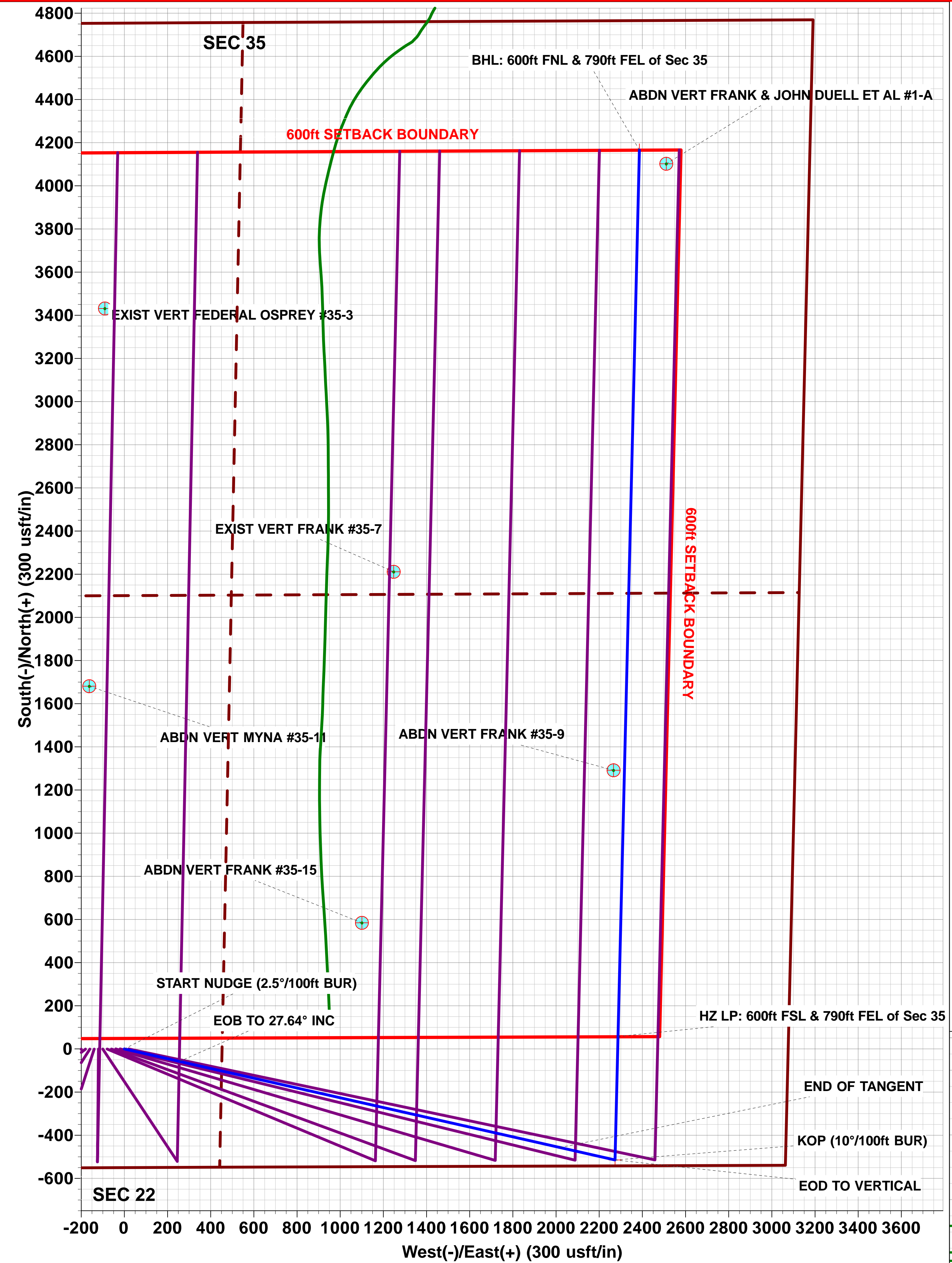
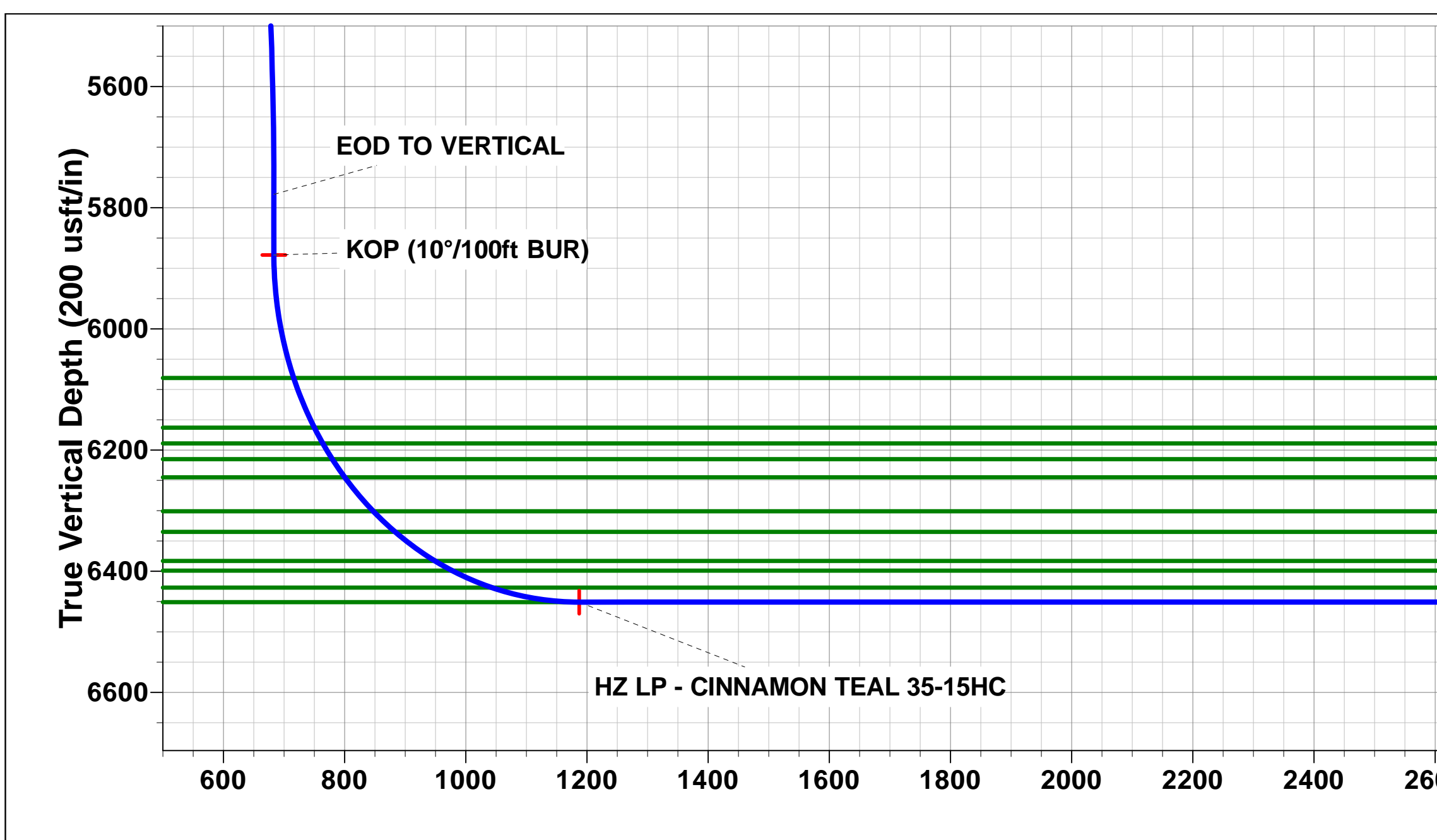
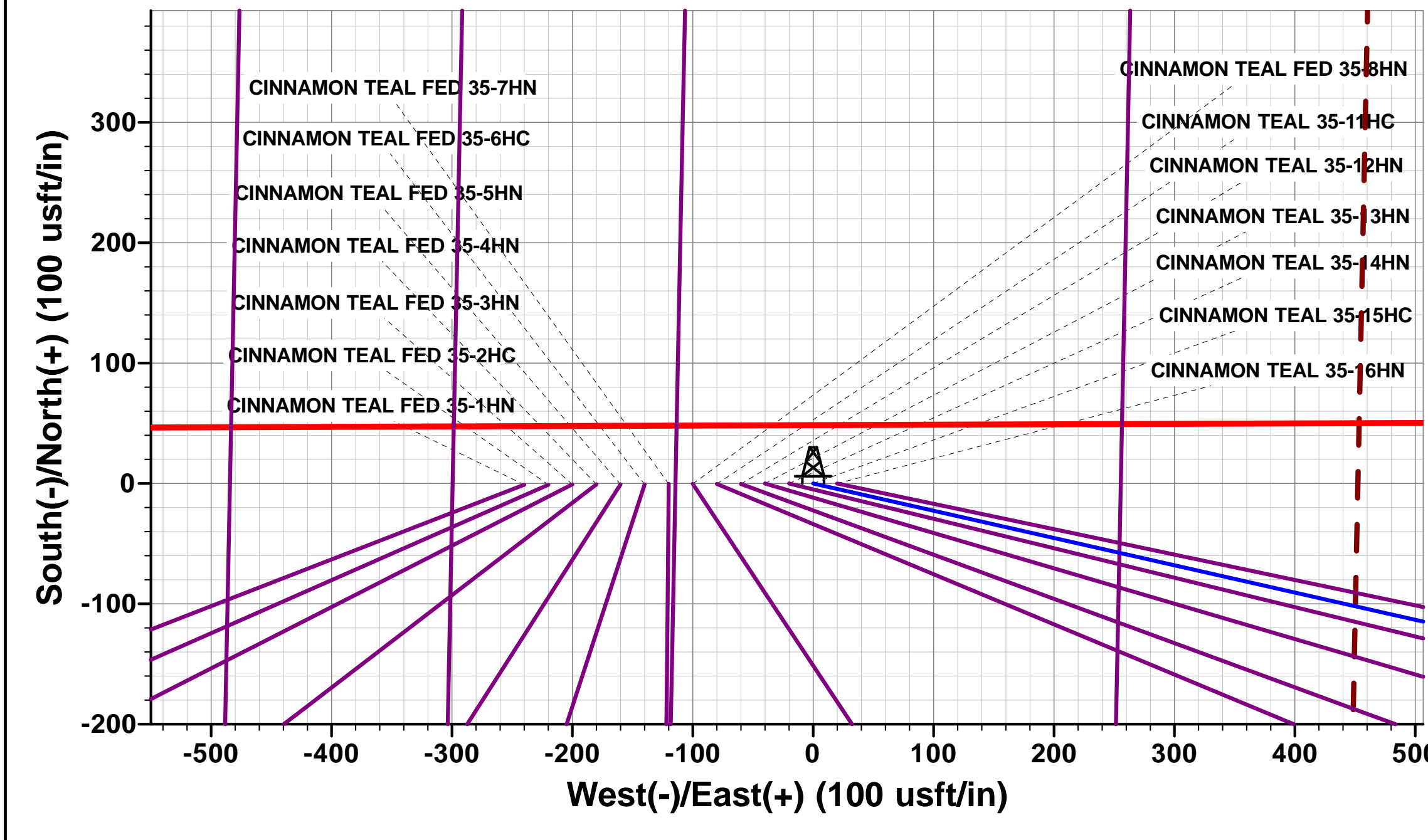
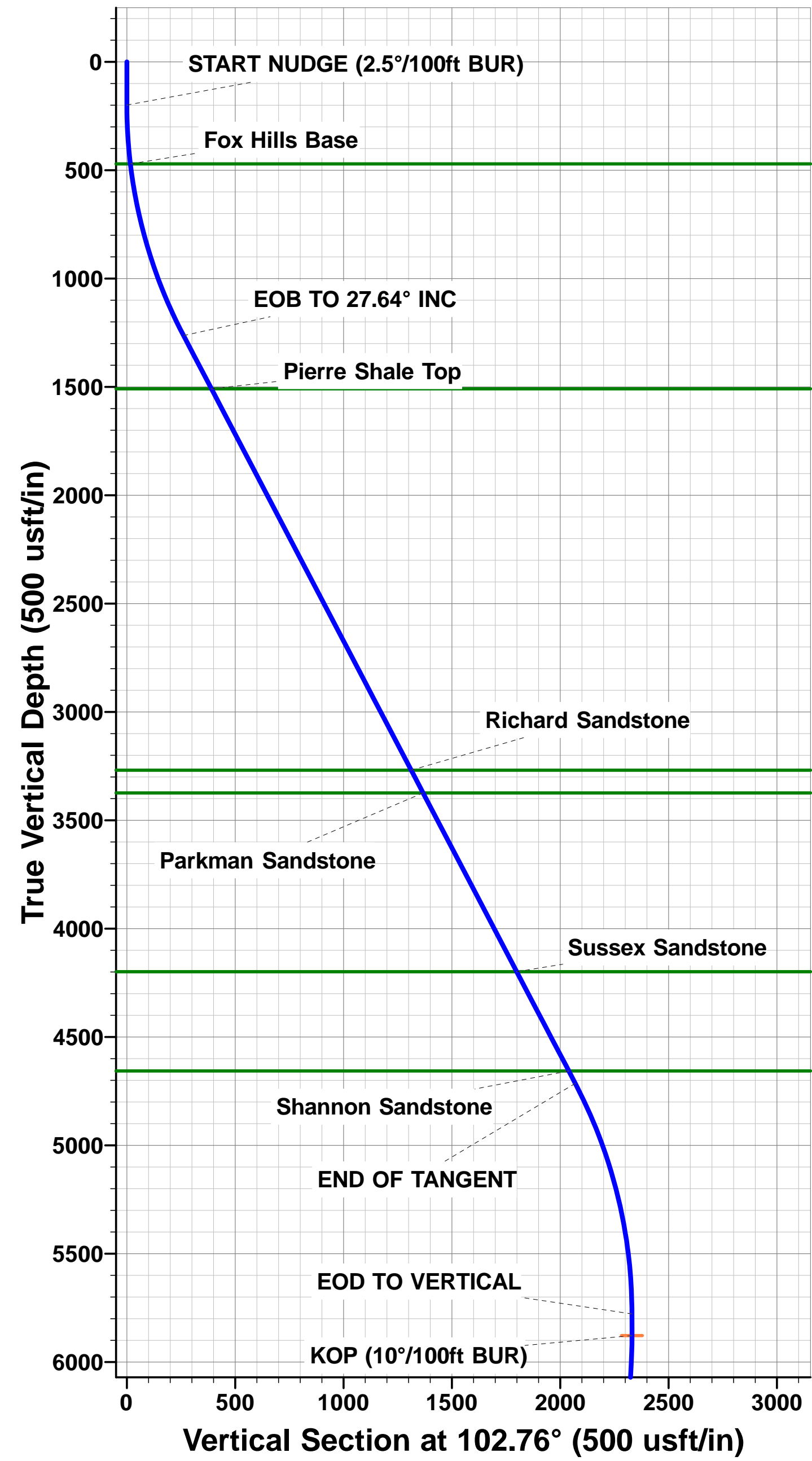
PROPOSED LOCAL COORDINATES:

SHL: 550ft FSL & 2199ft FWL Sec 35

HZ LP: 600ft FSL & 790ft FEL Sec 35

BHL: 600ft FNL & 790ft FEL of Sec 35

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - CINNAMON TEAL 35-15HC	5878.1	-514.7	2273.4	40.611648	-104.052757
HZ LP - CINNAMON TEAL 35-15HC	6451.0	58.1	2287.2	40.613220	-104.052707
BHL - CINNAMON TEAL 35-15HC	6451.0	4165.8	2386.2	40.624495	-104.052349



Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CINNAMON TEAL 35-15HC
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4940.0usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4940.0usft (Original Well Elev)
Site:	SE SW SEC. 35 T8N R60W 6th P.M.	North Reference:	True
Well:	CINNAMON TEAL 35-15HC	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Project	WELD COUNTY, COLORADO (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	SE SW SEC. 35 T8N R60W 6th P.M.		
Site Position:		Northing:	1,469,416.68 usft
From:	Lat/Long	Easting:	3,399,274.71 usft
Position Uncertainty:	0.0 usft	Slot Radius:	1.10000ft
		Latitude:	40.613058
		Longitude:	-104.061809
		Grid Convergence:	0.93 °

Well	CINNAMON TEAL 35-15HC		
Well Position	+N/-S	1.1 usft	Northing:
	+E/-W	239.9 usft	Easting:
Position Uncertainty		0.0 usft	Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	18/09/2017	7.82	67.12	52,544

Design	PROPOSAL #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	6,451.0	0.0	0.0	29.80

Plan Sections											
MD (usft)	Inc (°)	Azi (°)	Vertical Depth	SS (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100usf)	Turn Rate (°/100usf)	TFO (°)	Target
0.0	0.00	0.00	0.0	-4,940.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	-4,740.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,305.8	27.64	102.76	1,263.3	-3,676.7	-57.8	255.2	2.50	2.50	0.00	102.76	
5,201.9	27.64	102.76	4,714.8	-225.2	-456.9	2,018.2	0.00	0.00	0.00	0.00	
6,307.7	0.00	0.00	5,778.1	838.1	-514.7	2,273.4	2.50	-2.50	0.00	180.00	
6,407.7	0.00	0.00	5,878.1	938.1	-514.7	2,273.4	0.00	0.00	0.00	0.00	KOP - CINNAMON
7,307.6	90.00	1.38	6,451.0	1,511.0	58.1	2,287.2	10.00	10.00	0.15	1.38	HZ LP - CINNAMON
11,416.6	90.00	1.38	6,451.0	1,511.0	4,165.8	2,386.2	0.00	0.00	0.00	-177.48	BHL - CINNAMON

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Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4940.0usft (Original Well Elev)
Site:	SE SW SEC. 35 T8N R60W 6th P.M.	North Reference:	True
Well:	CINNAMON TEAL 35-15HC	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
SHL: 550ft FSL & 2199ft FWL of Sec 35										
0.0	0.00	0.00	0.0	4,940.00	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	4,840.00	0.0	0.0	0.0	0.00	0.00	0.00
START NUDGE (2.5°/100ft BUR)										
200.0	0.00	0.00	200.0	4,740.00	0.0	0.0	0.0	0.00	0.00	0.00
300.0	2.50	102.76	300.0	4,640.03	-0.5	2.1	0.6	2.50	2.50	0.00
400.0	5.00	102.76	399.7	4,540.25	-1.9	8.5	2.6	2.50	2.50	0.00
Fox Hills Base										
471.6	6.79	102.76	471.0	4,469.00	-3.6	15.7	4.7	2.50	2.50	0.00
500.0	7.50	102.76	499.1	4,440.86	-4.3	19.1	5.7	2.50	2.50	0.00
600.0	10.00	102.76	598.0	4,342.03	-7.7	34.0	10.2	2.50	2.50	0.00
700.0	12.50	102.76	696.0	4,243.96	-12.0	53.0	15.9	2.50	2.50	0.00
800.0	15.00	102.76	793.2	4,146.83	-17.2	76.2	22.9	2.50	2.50	0.00
900.0	17.50	102.76	889.2	4,050.83	-23.4	103.5	31.1	2.50	2.50	0.00
1,000.0	20.00	102.76	983.9	3,956.15	-30.5	134.8	40.5	2.50	2.50	0.00
1,100.0	22.50	102.76	1,077.0	3,862.95	-38.5	170.1	51.1	2.50	2.50	0.00
1,200.0	25.00	102.76	1,168.6	3,771.43	-47.4	209.4	62.9	2.50	2.50	0.00
1,300.0	27.50	102.76	1,258.2	3,681.75	-57.2	252.6	75.9	2.50	2.50	0.00
EOB TO 27.64° INC										
1,305.8	27.64	102.76	1,263.3	3,676.65	-57.8	255.2	76.7	2.50	2.50	0.00
1,400.0	27.64	102.76	1,346.8	3,593.16	-67.4	297.8	89.5	0.00	0.00	0.00
1,500.0	27.64	102.76	1,435.4	3,504.58	-77.7	343.1	103.1	0.00	0.00	0.00
Pierre Shale Top										
1,583.1	27.64	102.76	1,509.0	3,431.00	-86.2	380.6	114.4	0.00	0.00	0.00
1,600.0	27.64	102.76	1,524.0	3,415.99	-87.9	388.3	116.7	0.00	0.00	0.00
1,700.0	27.64	102.76	1,612.6	3,327.41	-98.2	433.6	130.3	0.00	0.00	0.00
1,800.0	27.64	102.76	1,701.2	3,238.82	-108.4	478.8	143.9	0.00	0.00	0.00
1,900.0	27.64	102.76	1,789.8	3,150.24	-118.6	524.1	157.5	0.00	0.00	0.00
2,000.0	27.64	102.76	1,878.3	3,061.65	-128.9	569.3	171.1	0.00	0.00	0.00
2,100.0	27.64	102.76	1,966.9	2,973.07	-139.1	614.6	184.7	0.00	0.00	0.00
2,200.0	27.64	102.76	2,055.5	2,884.48	-149.4	659.8	198.3	0.00	0.00	0.00
2,300.0	27.64	102.76	2,144.1	2,795.90	-159.6	705.1	211.9	0.00	0.00	0.00
2,400.0	27.64	102.76	2,232.7	2,707.31	-169.9	750.3	225.5	0.00	0.00	0.00
2,500.0	27.64	102.76	2,321.3	2,618.73	-180.1	795.6	239.1	0.00	0.00	0.00
2,600.0	27.64	102.76	2,409.9	2,530.14	-190.4	840.8	252.7	0.00	0.00	0.00
2,700.0	27.64	102.76	2,498.4	2,441.56	-200.6	886.1	266.3	0.00	0.00	0.00
2,800.0	27.64	102.76	2,587.0	2,352.97	-210.9	931.3	279.9	0.00	0.00	0.00
2,900.0	27.64	102.76	2,675.6	2,264.39	-221.1	976.6	293.5	0.00	0.00	0.00
3,000.0	27.64	102.76	2,764.2	2,175.80	-231.3	1,021.8	307.1	0.00	0.00	0.00
3,100.0	27.64	102.76	2,852.8	2,087.22	-241.6	1,067.1	320.7	0.00	0.00	0.00
3,200.0	27.64	102.76	2,941.4	1,998.63	-251.8	1,112.3	334.3	0.00	0.00	0.00
3,300.0	27.64	102.76	3,030.0	1,910.05	-262.1	1,157.6	348.0	0.00	0.00	0.00
3,400.0	27.64	102.76	3,118.5	1,821.46	-272.3	1,202.8	361.6	0.00	0.00	0.00
3,500.0	27.64	102.76	3,207.1	1,732.88	-282.6	1,248.1	375.2	0.00	0.00	0.00
Richard Sandstone										
3,569.9	27.64	102.76	3,269.0	1,671.00	-289.7	1,279.7	384.7	0.00	0.00	0.00
3,600.0	27.64	102.76	3,295.7	1,644.29	-292.8	1,293.4	388.8	0.00	0.00	0.00
Parkman Sandstone										
3,688.4	27.64	102.76	3,374.0	1,566.00	-301.9	1,333.3	400.8	0.00	0.00	0.00
3,700.0	27.64	102.76	3,384.3	1,555.71	-303.1	1,338.6	402.4	0.00	0.00	0.00
3,800.0	27.64	102.76	3,472.9	1,467.12	-313.3	1,383.9	416.0	0.00	0.00	0.00
3,900.0	27.64	102.76	3,561.5	1,378.54	-323.6	1,429.1	429.6	0.00	0.00	0.00
4,000.0	27.64	102.76	3,650.0	1,289.95	-333.8	1,474.4	443.2	0.00	0.00	0.00

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Well:	CINNAMON TEAL 35-15HC	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,100.0	27.64	102.76	3,738.6	1,201.37	-344.0	1,519.6	456.8	0.00	0.00	0.00
4,200.0	27.64	102.76	3,827.2	1,112.78	-354.3	1,564.9	470.4	0.00	0.00	0.00
4,300.0	27.64	102.76	3,915.8	1,024.20	-364.5	1,610.1	484.0	0.00	0.00	0.00
4,400.0	27.64	102.76	4,004.4	935.61	-374.8	1,655.4	497.6	0.00	0.00	0.00
4,500.0	27.64	102.76	4,093.0	847.03	-385.0	1,700.6	511.2	0.00	0.00	0.00
4,600.0	27.64	102.76	4,181.6	758.44	-395.3	1,745.9	524.8	0.00	0.00	0.00
Sussex Sandstone										
4,619.7	27.64	102.76	4,199.0	741.00	-397.3	1,754.8	527.5	0.00	0.00	0.00
4,700.0	27.64	102.76	4,270.1	669.86	-405.5	1,791.1	538.4	0.00	0.00	0.00
4,800.0	27.64	102.76	4,358.7	581.27	-415.8	1,836.4	552.0	0.00	0.00	0.00
4,900.0	27.64	102.76	4,447.3	492.69	-426.0	1,881.6	565.6	0.00	0.00	0.00
5,000.0	27.64	102.76	4,535.9	404.10	-436.2	1,926.9	579.2	0.00	0.00	0.00
5,100.0	27.64	102.76	4,624.5	315.52	-446.5	1,972.1	592.8	0.00	0.00	0.00
Shannon Sandstone										
5,136.7	27.64	102.76	4,657.0	283.00	-450.3	1,988.7	597.8	0.00	0.00	0.00
5,200.0	27.64	102.76	4,713.1	226.93	-456.7	2,017.4	606.4	0.00	0.00	0.00
END OF TANGENT										
5,201.9	27.64	102.76	4,714.8	225.25	-456.9	2,018.2	606.6	0.00	0.00	0.00
5,300.0	25.19	102.76	4,802.6	137.40	-466.6	2,060.8	619.4	2.50	-2.50	0.00
5,400.0	22.69	102.76	4,894.0	46.01	-475.5	2,100.4	631.3	2.50	-2.50	0.00
5,500.0	20.19	102.76	4,987.1	-47.06	-483.6	2,136.0	642.1	2.50	-2.50	0.00
5,600.0	17.69	102.76	5,081.6	-141.64	-490.8	2,167.7	651.6	2.50	-2.50	0.00
5,700.0	15.19	102.76	5,177.5	-237.54	-497.0	2,195.3	659.9	2.50	-2.50	0.00
5,800.0	12.69	102.76	5,274.6	-334.59	-502.3	2,218.8	666.9	2.50	-2.50	0.00
5,900.0	10.19	102.76	5,372.6	-432.59	-506.7	2,238.1	672.7	2.50	-2.50	0.00
6,000.0	7.69	102.76	5,471.4	-531.37	-510.1	2,253.3	677.3	2.50	-2.50	0.00
6,100.0	5.19	102.76	5,570.7	-630.73	-512.6	2,264.2	680.6	2.50	-2.50	0.00
6,200.0	2.69	102.76	5,670.5	-730.49	-514.1	2,270.9	682.6	2.50	-2.50	0.00
6,300.0	0.19	102.76	5,770.4	-830.45	-514.7	2,273.4	683.3	2.50	-2.50	0.00
EOD TO VERTICAL										
6,307.7	0.00	0.00	5,778.1	-838.10	-514.7	2,273.4	683.3	2.50	-2.50	0.00
6,400.0	0.00	0.00	5,870.4	-930.45	-514.7	2,273.4	683.3	0.00	0.00	0.00
KOP (10°/100ft BUR)										
6,407.7	0.00	0.00	5,878.1	-938.10	-514.7	2,273.4	683.3	0.00	0.00	0.00
6,500.0	9.24	1.38	5,970.0	-1,030.05	-507.3	2,273.6	689.9	10.00	10.00	0.00
6,600.0	19.24	1.38	6,066.9	-1,126.85	-482.7	2,274.2	711.5	10.00	10.00	0.00
Sharon Springs										
6,615.1	20.74	1.38	6,081.0	-1,141.00	-477.6	2,274.3	716.0	10.00	10.00	0.00
6,700.0	29.24	1.38	6,157.9	-1,217.92	-441.7	2,275.2	747.5	10.00	10.00	0.00
Niobrara A Chalk										
6,705.8	29.82	1.38	6,163.0	-1,223.00	-438.9	2,275.2	750.1	10.00	10.00	0.00
Niobrara A Chalk Base										
6,736.3	32.87	1.38	6,189.0	-1,249.00	-423.0	2,275.6	764.0	10.00	10.00	0.00
Niobrara B1 Chalk Top										
6,767.8	36.02	1.38	6,215.0	-1,275.00	-405.2	2,276.0	779.7	10.00	10.00	0.00
6,800.0	39.24	1.38	6,240.5	-1,300.49	-385.6	2,276.5	796.9	10.00	10.00	0.00
Niobrara B1 Chalk Base										
6,805.8	39.82	1.38	6,245.0	-1,305.00	-381.8	2,276.6	800.2	10.00	10.00	0.00
Niobrara B2 Chalk Base										
6,883.4	47.58	1.38	6,301.0	-1,361.00	-328.3	2,277.9	847.3	10.00	10.00	0.00
6,900.0	49.24	1.38	6,312.0	-1,372.04	-315.9	2,278.2	858.2	10.00	10.00	0.00
Niobrara C Chalk Top										

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Well:	CINNAMON TEAL 35-15HC	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Planned Survey

MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,936.5	52.89	1.38	6,335.0	-1,395.00	-287.5	2,278.9	883.2	10.00	10.00	0.00
7,000.0	59.24	1.38	6,370.4	-1,430.41	-234.9	2,280.1	929.5	10.00	10.00	0.00
Niobrara C Chalk Base										
7,025.6	61.80	1.38	6,383.0	-1,443.00	-212.6	2,280.7	949.1	10.00	10.00	0.00
Niobrara D Chalk Top										
7,061.6	65.40	1.38	6,399.0	-1,459.00	-180.4	2,281.5	977.4	10.00	10.00	0.00
7,100.0	69.24	1.38	6,413.8	-1,473.81	-145.0	2,282.3	1,008.6	10.00	10.00	0.00
Ft. Hays										
7,141.2	73.36	1.38	6,427.0	-1,487.00	-106.0	2,283.3	1,042.9	10.00	10.00	0.00
7,200.0	79.24	1.38	6,440.9	-1,500.93	-48.9	2,284.6	1,093.1	10.00	10.00	0.00
7,300.0	89.24	1.38	6,451.0	-1,510.95	50.5	2,287.0	1,180.5	10.00	10.00	0.00
Codell (Target)										
7,303.8	89.24	1.38	6,451.0	-1,511.00	54.3	2,287.1	1,183.9	0.00	0.00	0.00
HZ LP: 600ft FSL & 790ft FEL of Sec 35										
7,307.6	90.00	1.38	6,451.0	-1,511.00	58.1	2,287.2	1,187.2	19.92	19.92	0.00
7,400.0	90.00	1.38	6,451.0	-1,510.99	150.4	2,289.4	1,268.5	0.00	0.00	0.00
7,500.0	90.00	1.38	6,451.0	-1,510.99	250.4	2,291.8	1,356.4	0.00	0.00	0.00
7,600.0	90.00	1.38	6,451.0	-1,510.98	350.4	2,294.3	1,444.4	0.00	0.00	0.00
7,700.0	90.00	1.38	6,451.0	-1,510.98	450.4	2,296.7	1,532.3	0.00	0.00	0.00
7,800.0	90.00	1.38	6,451.0	-1,510.98	550.3	2,299.1	1,620.3	0.00	0.00	0.00
7,900.0	90.00	1.38	6,451.0	-1,510.97	650.3	2,301.5	1,708.2	0.00	0.00	0.00
8,000.0	90.00	1.38	6,451.0	-1,510.97	750.3	2,303.9	1,796.1	0.00	0.00	0.00
8,100.0	90.00	1.38	6,451.0	-1,510.96	850.2	2,306.3	1,884.1	0.00	0.00	0.00
8,200.0	90.00	1.38	6,451.0	-1,510.96	950.2	2,308.7	1,972.0	0.00	0.00	0.00
8,300.0	90.00	1.38	6,451.0	-1,510.96	1,050.2	2,311.1	2,060.0	0.00	0.00	0.00
8,400.0	90.00	1.38	6,451.0	-1,510.95	1,150.2	2,313.5	2,147.9	0.00	0.00	0.00
8,500.0	90.00	1.38	6,451.0	-1,510.95	1,250.1	2,315.9	2,235.9	0.00	0.00	0.00
8,600.0	90.00	1.38	6,450.9	-1,510.95	1,350.1	2,318.3	2,323.8	0.00	0.00	0.00
8,700.0	90.00	1.38	6,450.9	-1,510.95	1,450.1	2,320.8	2,411.8	0.00	0.00	0.00
8,800.0	90.00	1.38	6,450.9	-1,510.95	1,550.0	2,323.2	2,499.7	0.00	0.00	0.00
8,900.0	90.00	1.38	6,450.9	-1,510.94	1,650.0	2,325.6	2,587.7	0.00	0.00	0.00
9,000.0	90.00	1.38	6,450.9	-1,510.94	1,750.0	2,328.0	2,675.6	0.00	0.00	0.00
9,100.0	90.00	1.38	6,450.9	-1,510.94	1,849.9	2,330.4	2,763.5	0.00	0.00	0.00
9,200.0	90.00	1.38	6,450.9	-1,510.94	1,949.9	2,332.8	2,851.5	0.00	0.00	0.00
9,300.0	90.00	1.38	6,450.9	-1,510.94	2,049.9	2,335.2	2,939.4	0.00	0.00	0.00
9,400.0	90.00	1.38	6,450.9	-1,510.94	2,149.9	2,337.6	3,027.4	0.00	0.00	0.00
9,500.0	90.00	1.38	6,450.9	-1,510.94	2,249.8	2,340.0	3,115.3	0.00	0.00	0.00
9,600.0	90.00	1.38	6,450.9	-1,510.94	2,349.8	2,342.4	3,203.3	0.00	0.00	0.00
9,700.0	90.00	1.38	6,450.9	-1,510.94	2,449.8	2,344.8	3,291.2	0.00	0.00	0.00
9,800.0	90.00	1.38	6,450.9	-1,510.94	2,549.7	2,347.3	3,379.2	0.00	0.00	0.00
9,900.0	90.00	1.38	6,450.9	-1,510.95	2,649.7	2,349.7	3,467.1	0.00	0.00	0.00
10,000.0	90.00	1.38	6,450.9	-1,510.95	2,749.7	2,352.1	3,555.1	0.00	0.00	0.00
10,100.0	90.00	1.38	6,450.9	-1,510.95	2,849.7	2,354.5	3,643.0	0.00	0.00	0.00
10,200.0	90.00	1.38	6,451.0	-1,510.95	2,949.6	2,356.9	3,730.9	0.00	0.00	0.00
10,300.0	90.00	1.38	6,451.0	-1,510.95	3,049.6	2,359.3	3,818.9	0.00	0.00	0.00
10,400.0	90.00	1.38	6,451.0	-1,510.96	3,149.6	2,361.7	3,906.8	0.00	0.00	0.00
10,500.0	90.00	1.38	6,451.0	-1,510.96	3,249.5	2,364.1	3,994.8	0.00	0.00	0.00
10,600.0	90.00	1.38	6,451.0	-1,510.96	3,349.5	2,366.5	4,082.7	0.00	0.00	0.00
10,700.0	90.00	1.38	6,451.0	-1,510.97	3,449.5	2,368.9	4,170.7	0.00	0.00	0.00
10,800.0	90.00	1.38	6,451.0	-1,510.97	3,549.5	2,371.3	4,258.6	0.00	0.00	0.00
10,900.0	90.00	1.38	6,451.0	-1,510.97	3,649.4	2,373.8	4,346.6	0.00	0.00	0.00
11,000.0	90.00	1.38	6,451.0	-1,510.98	3,749.4	2,376.2	4,434.5	0.00	0.00	0.00
11,100.0	90.00	1.38	6,451.0	-1,510.98	3,849.4	2,378.6	4,522.5	0.00	0.00	0.00
11,200.0	90.00	1.38	6,451.0	-1,510.99	3,949.3	2,381.0	4,610.4	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CINNAMON TEAL 35-15HC
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4940.0usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4940.0usft (Original Well Elev)
Site:	SE SW SEC. 35 T8N R60W 6th P.M.	North Reference:	True
Well:	CINNAMON TEAL 35-15HC	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,300.0	90.00	1.38	6,451.0	-1,510.99	4,049.3	2,383.4	4,698.3	0.00	0.00	0.00
11,400.0	90.00	1.38	6,451.0	-1,511.00	4,149.3	2,385.8	4,786.3	0.00	0.00	0.00
BHL: 600ft FNL & 790ft FEL of Sec 35										
11,416.6	90.00	1.38	6,451.0	-1,511.00	4,165.8	2,386.2	4,800.9	0.00	0.00	0.00

Formations						
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
471.6	471.0	Fox Hills Base				
1,583.1	1,509.0	Pierre Shale Top				
3,569.9	3,269.0	Richard Sandstone				
3,688.4	3,374.0	Parkman Sandstone				
4,619.7	4,199.0	Sussex Sandstone				
5,136.7	4,657.0	Shannon Sandstone				
6,615.1	6,081.0	Sharon Springs				
6,705.8	6,163.0	Niobrara A Chalk				
6,736.3	6,189.0	Niobrara A Chalk Base				
6,767.8	6,215.0	Niobrara B1 Chalk Top				
6,805.8	6,245.0	Niobrara B1 Chalk Base				
6,883.4	6,301.0	Niobrara B2 Chalk Base				
6,936.5	6,335.0	Niobrara C Chalk Top				
7,025.6	6,383.0	Niobrara C Chalk Base				
7,061.6	6,399.0	Niobrara D Chalk Top				
7,141.2	6,427.0	Ft. Hays				
7,303.8	6,451.0	Codell (Target)				

Plan Annotations				
MD (usft)	TVD (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
0.0	0.0	0.0	0.0	SHL: 550ft FSL & 2199ft FWL of Sec 35
200.0	200.0	0.0	0.0	START NUDGE (2.5°/100ft BUR)
1,305.8	1,263.3	-57.8	255.2	EOB TO 27.64° INC
5,201.9	4,714.8	-456.9	2,018.2	END OF TANGENT
6,307.7	5,778.1	-514.7	2,273.4	EOD TO VERTICAL
6,407.7	5,878.1	-514.7	2,273.4	KOP (10°/100ft BUR)
7,307.6	6,451.0	58.1	2,287.2	HZ LP: 600ft FSL & 790ft FEL of Sec 35
11,416.6	6,451.0	4,165.8	2,386.2	BHL: 600ft FNL & 790ft FEL of Sec 35