

MALLARD EXPLORATION

WELD COUNTY, COLORADO (NAD 83)

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

CINNAMON TEAL 35-13HN

ORIGINAL WELLBORE

28 November, 2018

Plan: PROPOSAL #2





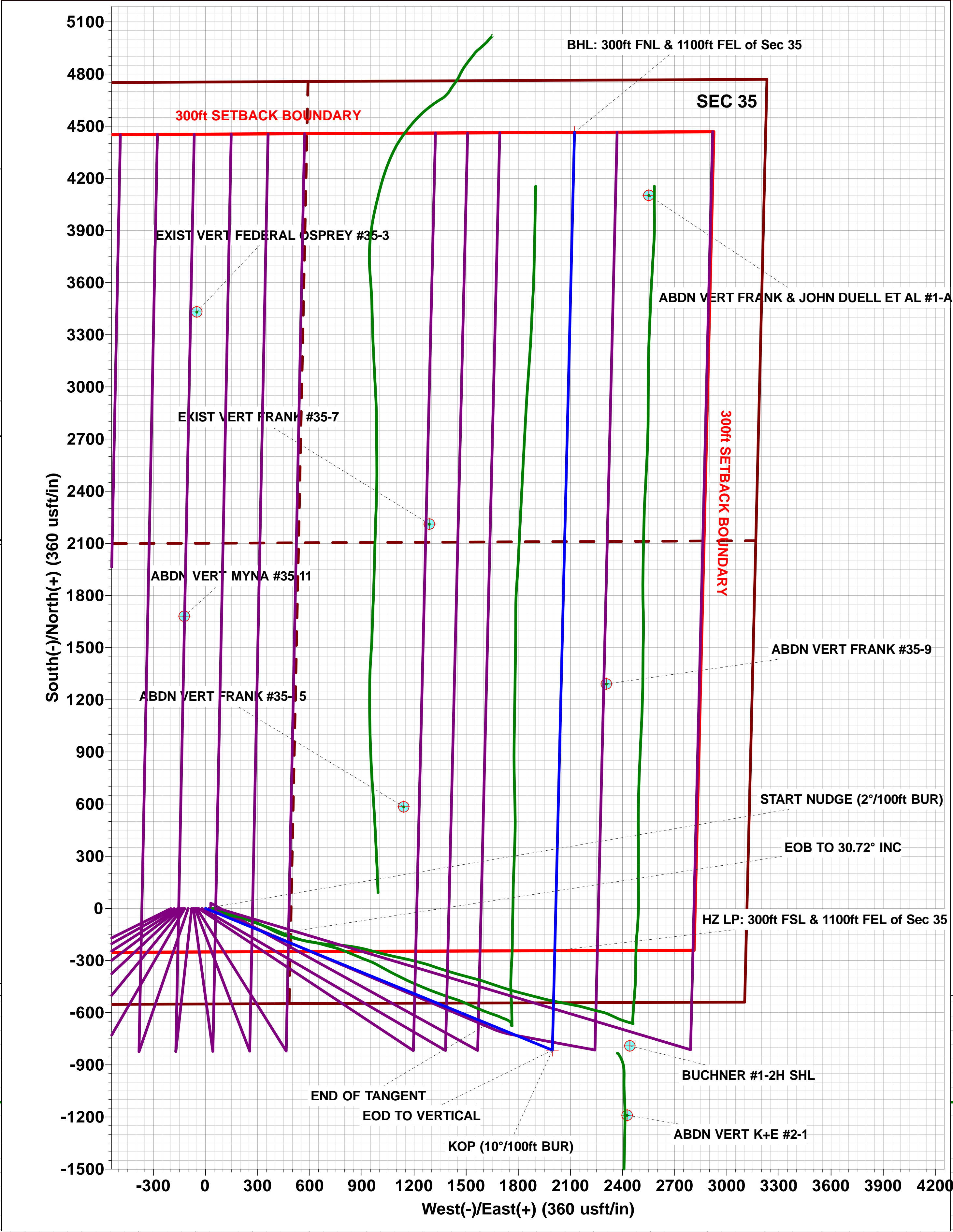
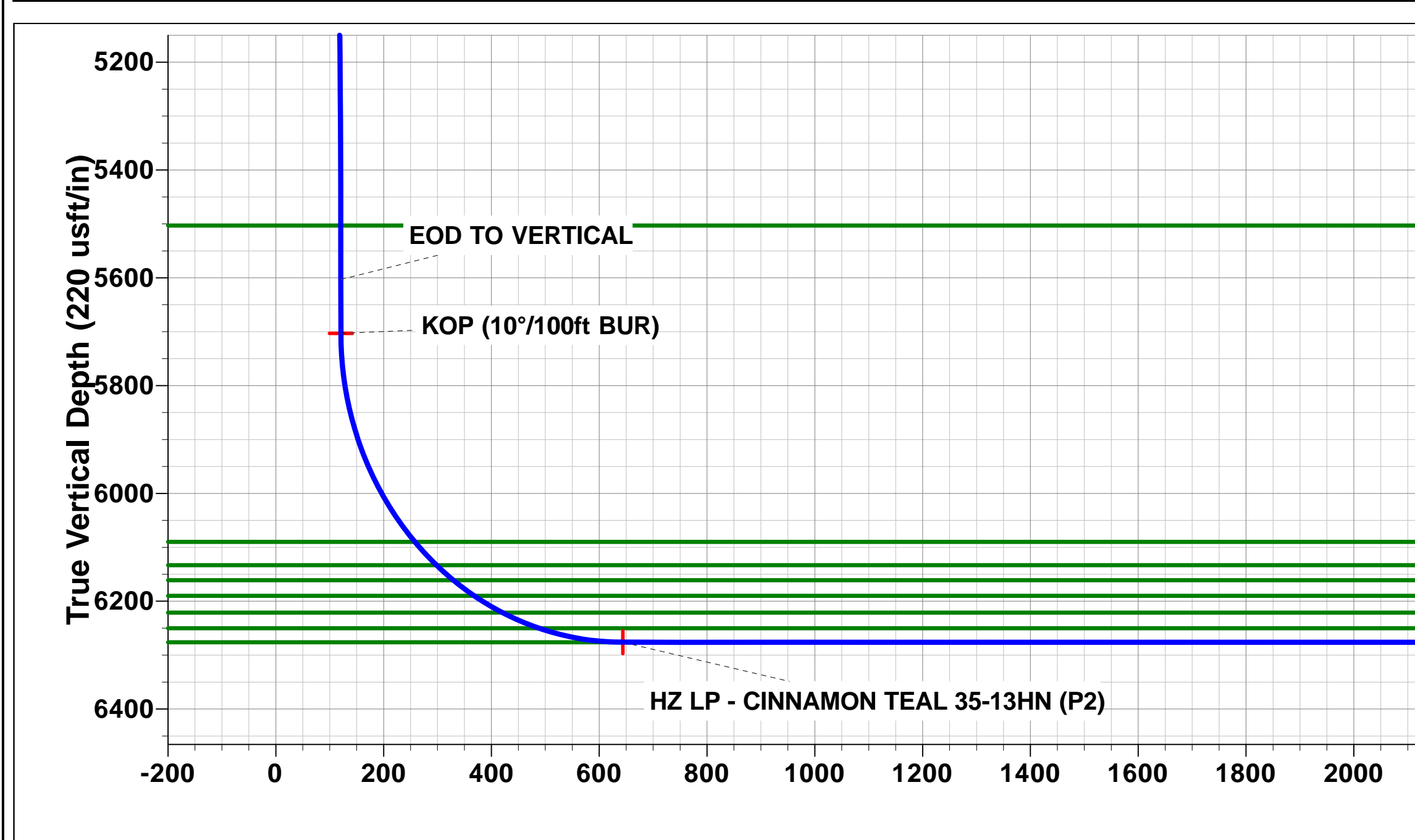
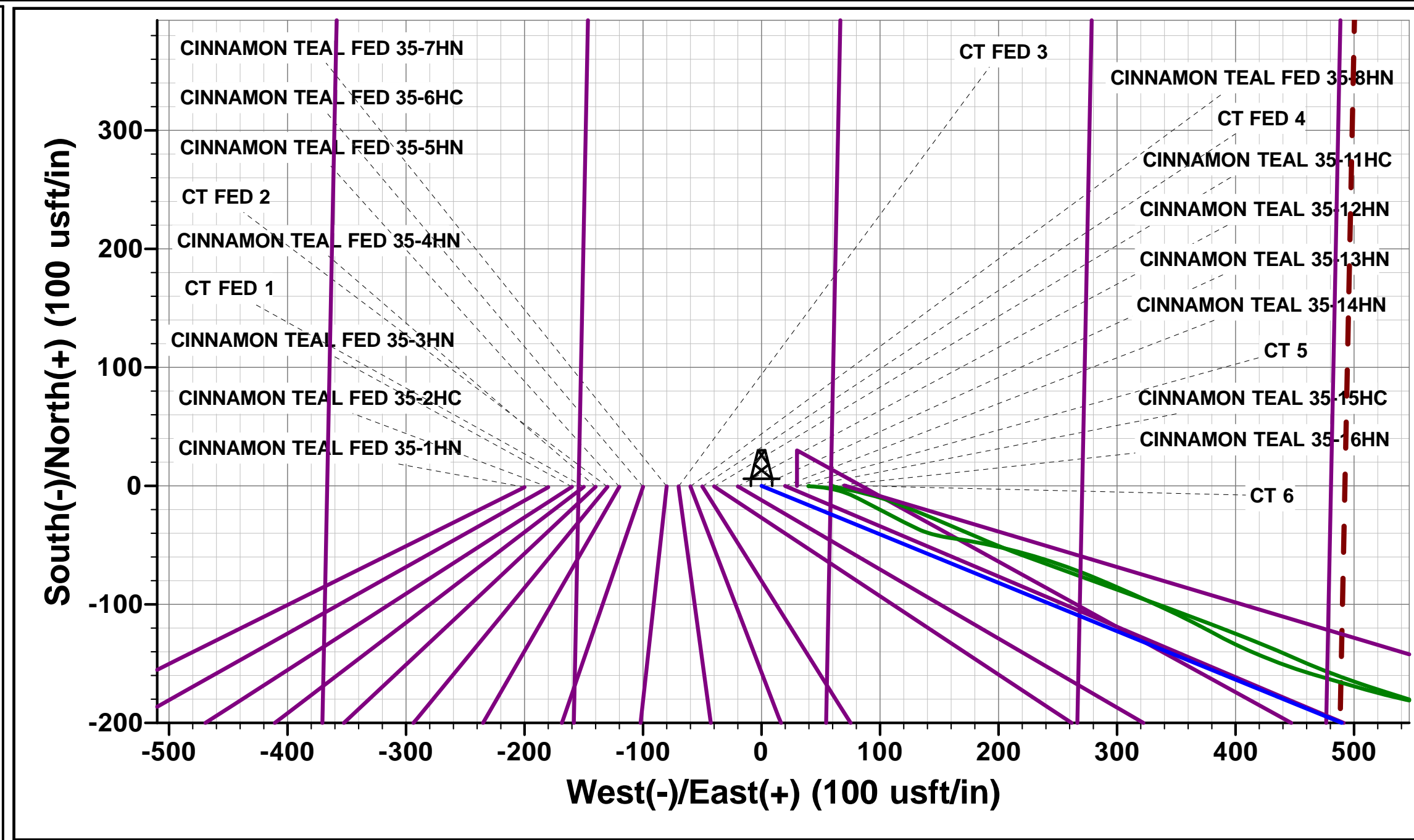
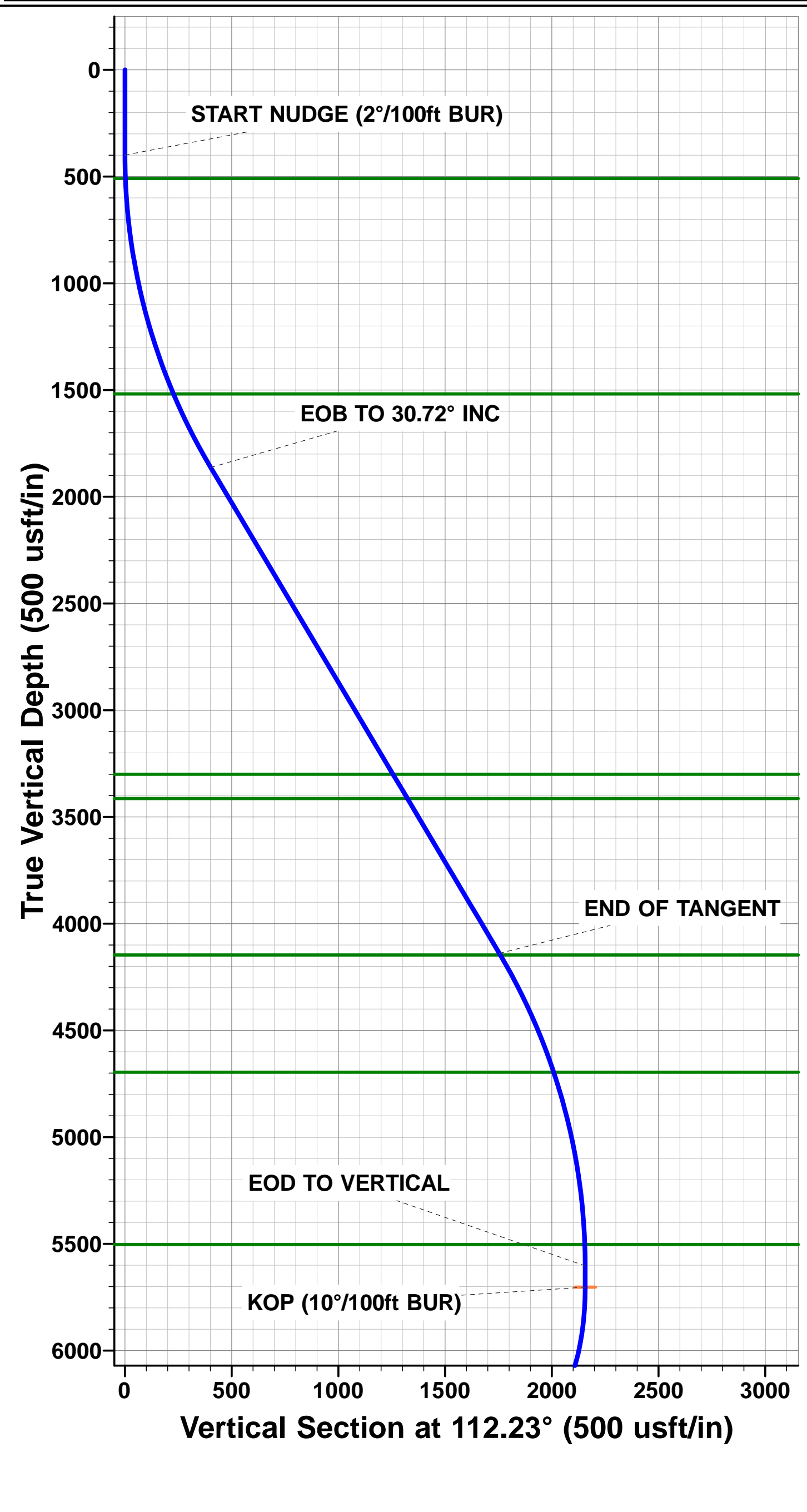
Project: WELD COUNTY, COLORADO (NAD 83)
Site: SE SW SEC. 35 T8N R60W 6th P.M.
Well: CINNAMON TEAL 35-13HN
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #2

ANNOTATIONS									
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Dep	Annotation	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	SHL: 550ft FSL & 2160ft FWL of Sec 35	
400.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)	
1863.27	1935.78	30.72	112.23	-152.03	372.03	22.50	401.89	EOB TO 30.72° INC	
4139.77	4583.76	30.72	112.23	-663.67	1624.04	98.23	1754.42	END OF TANGENT	
5603.04	6119.54	0.00	0.00	-815.70	1996.07	120.73	2156.31	EOD TO VERTICAL	
5703.04	6219.54	0.00	0.00	-815.70	1996.07	120.73	2156.31	KOP (10°/100ft BUR)	
6276.00	7119.54	90.00	1.38	-242.91	2009.87	643.92	2729.27	HZ LP: 300ft FSL & 1100ft FEL of Sec 35	
6276.04	11828.00	90.00	1.38	4464.19	2123.24	4943.39	7437.72	BHL: 300ft FNL & 1100ft FEL of Sec 35	

PROPOSED LOCAL COORDINATES:

SHL: 550ft FSL & 2160ft FWL Sec 35
HZ LP: 300ft FSL & 1100ft FEL Sec 35
BHL: 300ft FNL & 1100ft FEL of Sec 35

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - CINNAMON TEAL 35-13HN (P2)	5703.04	-815.70	1996.07	40.610822	-104.053900
HZ LP - CINNAMON TEAL 35-13HN (P2)	6276.00	-242.91	2009.87	40.612394	-104.053850
BHL - CINNAMON TEAL 35-13HN (P2)	6276.00	4464.18	2123.29	40.625314	-104.053440



Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CINNAMON TEAL 35-13HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB 25' @ 4949.00usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB 25' @ 4949.00usft
Site:	SE SW SEC. 35 T8N R60W 6th P.M.	North Reference:	True
Well:	CINNAMON TEAL 35-13HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

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	Latitude:	40.613058
From:	Lat/Long	Easting:	3,399,274.71 usft	Longitude:	-104.061809
Position Uncertainty:	0.00 usft	Slot Radius:	1.10000ft	Grid Convergence:	0.93 °

Well	CINNAMON TEAL 35-13HN					
Well Position	+N-S	1.08 usft	Northing:	1,469,421.00 usft	Latitude:	40.613061
	+E-W	199.90 usft	Easting:	3,399,474.57 usft	Longitude:	-104.061089
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,924.00 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	28/11/2018	7.69	67.09	52,407

Design	PROPOSAL #2			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (°)
	6,276.00	0.00	0.00	25.44

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
0.00	0.00	0.00	0.00	-4,949.00	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.00	400.00	-4,549.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,935.78	30.72	112.23	1,863.27	-3,085.73	-152.03	372.03	2.00	2.00	0.00	112.23	
4,583.76	30.72	112.23	4,139.77	-809.23	-663.67	1,624.04	0.00	0.00	0.00	0.00	
6,119.54	0.00	0.00	5,603.04	654.04	-815.70	1,996.07	2.00	-2.00	0.00	180.00	
6,219.54	0.00	0.00	5,703.04	754.04	-815.70	1,996.07	0.00	0.00	0.00	0.00	KOP - CINNAMON
7,119.54	90.00	1.38	6,276.00	1,327.00	-242.91	2,009.87	10.00	10.00	0.15	1.38	HZ LP - CINNAMON
11,828.00	90.00	1.38	6,276.00	1,327.00	4,464.18	2,123.29	0.00	0.00	0.00	0.00	BHL - CINNAMON

Planning Report



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Company:	MALLARD EXPLORATION	TVD Reference:	KB 25' @ 4949.00usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB 25' @ 4949.00usft
Site:	SE SW SEC. 35 T8N R60W 6th P.M.	North Reference:	True
Well:	CINNAMON TEAL 35-13HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

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 & 2160ft FWL of Sec 35										
0.00	0.00	0.00	0.00	4,949.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	4,849.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	4,749.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	4,649.00	0.00	0.00	0.00	0.00	0.00	0.00
START NUDGE (2°/100ft BUR)										
400.00	0.00	0.00	400.00	4,549.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	2.00	112.23	499.98	4,449.02	-0.66	1.62	0.10	2.00	2.00	0.00
Fox Hills Base										
510.03	2.20	112.23	510.00	4,439.00	-0.80	1.96	0.12	2.00	2.00	0.00
600.00	4.00	112.23	599.84	4,349.16	-2.64	6.46	0.39	2.00	2.00	0.00
700.00	6.00	112.23	699.45	4,249.55	-5.94	14.53	0.88	2.00	2.00	0.00
800.00	8.00	112.23	798.70	4,150.30	-10.55	25.81	1.56	2.00	2.00	0.00
900.00	10.00	112.23	897.47	4,051.53	-16.46	40.29	2.44	2.00	2.00	0.00
1,000.00	12.00	112.23	995.62	3,953.38	-23.68	57.95	3.51	2.00	2.00	0.00
1,100.00	14.00	112.23	1,093.06	3,855.94	-32.19	78.77	4.76	2.00	2.00	0.00
1,200.00	16.00	112.23	1,189.64	3,759.36	-41.98	102.73	6.21	2.00	2.00	0.00
1,300.00	18.00	112.23	1,285.27	3,663.73	-53.04	129.79	7.85	2.00	2.00	0.00
1,400.00	20.00	112.23	1,379.82	3,569.18	-65.36	159.93	9.67	2.00	2.00	0.00
1,500.00	22.00	112.23	1,473.17	3,475.83	-78.91	193.10	11.68	2.00	2.00	0.00
Pierre Shale Top										
1,549.61	22.99	112.23	1,519.00	3,430.00	-86.09	210.67	12.74	2.00	2.00	0.00
1,600.00	24.00	112.23	1,565.21	3,383.79	-93.69	229.27	13.87	2.00	2.00	0.00
1,700.00	26.00	112.23	1,655.84	3,293.16	-109.68	268.39	16.23	2.00	2.00	0.00
1,800.00	28.00	112.23	1,744.94	3,204.06	-126.85	310.41	18.77	2.00	2.00	0.00
1,900.00	30.00	112.23	1,832.39	3,116.61	-145.19	355.29	21.49	2.00	2.00	0.00
EOB TO 30.72° INC										
1,935.78	30.72	112.23	1,863.27	3,085.73	-152.03	372.03	22.50	2.00	2.00	0.00
2,000.00	30.72	112.23	1,918.48	3,030.52	-164.44	402.39	24.34	0.00	0.00	0.00
2,100.00	30.72	112.23	2,004.45	2,944.55	-183.76	449.67	27.20	0.00	0.00	0.00
2,200.00	30.72	112.23	2,090.42	2,858.58	-203.08	496.96	30.06	0.00	0.00	0.00
2,300.00	30.72	112.23	2,176.39	2,772.61	-222.40	544.24	32.92	0.00	0.00	0.00
2,400.00	30.72	112.23	2,262.36	2,686.64	-241.73	591.52	35.78	0.00	0.00	0.00
2,500.00	30.72	112.23	2,348.34	2,600.66	-261.05	638.80	38.64	0.00	0.00	0.00
2,600.00	30.72	112.23	2,434.31	2,514.69	-280.37	686.08	41.50	0.00	0.00	0.00
2,700.00	30.72	112.23	2,520.28	2,428.72	-299.69	733.37	44.36	0.00	0.00	0.00
2,800.00	30.72	112.23	2,606.25	2,342.75	-319.01	780.65	47.22	0.00	0.00	0.00
2,900.00	30.72	112.23	2,692.22	2,256.78	-338.34	827.93	50.08	0.00	0.00	0.00
3,000.00	30.72	112.23	2,778.19	2,170.81	-357.66	875.21	52.94	0.00	0.00	0.00
3,100.00	30.72	112.23	2,864.16	2,084.84	-376.98	922.49	55.80	0.00	0.00	0.00
3,200.00	30.72	112.23	2,950.14	1,998.86	-396.30	969.78	58.65	0.00	0.00	0.00
3,300.00	30.72	112.23	3,036.11	1,912.89	-415.62	1,017.06	61.51	0.00	0.00	0.00
3,400.00	30.72	112.23	3,122.08	1,826.92	-434.95	1,064.34	64.37	0.00	0.00	0.00
3,500.00	30.72	112.23	3,208.05	1,740.95	-454.27	1,111.62	67.23	0.00	0.00	0.00
3,600.00	30.72	112.23	3,294.02	1,654.98	-473.59	1,158.90	70.09	0.00	0.00	0.00
Richard Sandstone										
3,606.95	30.72	112.23	3,300.00	1,649.00	-474.93	1,162.19	70.29	0.00	0.00	0.00
3,700.00	30.72	112.23	3,379.99	1,569.01	-492.91	1,206.18	72.95	0.00	0.00	0.00
Parkman Sandstone										
3,739.56	30.72	112.23	3,414.00	1,535.00	-500.55	1,224.89	74.08	0.00	0.00	0.00
3,800.00	30.72	112.23	3,465.96	1,483.04	-512.23	1,253.47	75.81	0.00	0.00	0.00
3,900.00	30.72	112.23	3,551.94	1,397.06	-531.55	1,300.75	78.67	0.00	0.00	0.00
4,000.00	30.72	112.23	3,637.91	1,311.09	-550.88	1,348.03	81.53	0.00	0.00	0.00

Planning Report



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Site:	SE SW SEC. 35 T8N R60W 6th P.M.	North Reference:	True
Well:	CINNAMON TEAL 35-13HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

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)
4,100.00	30.72	112.23	3,723.88	1,225.12	-570.20	1,395.31	84.39	0.00	0.00	0.00
4,200.00	30.72	112.23	3,809.85	1,139.15	-589.52	1,442.59	87.25	0.00	0.00	0.00
4,300.00	30.72	112.23	3,895.82	1,053.18	-608.84	1,489.88	90.11	0.00	0.00	0.00
4,400.00	30.72	112.23	3,981.79	967.21	-628.16	1,537.16	92.97	0.00	0.00	0.00
4,500.00	30.72	112.23	4,067.76	881.24	-647.49	1,584.44	95.83	0.00	0.00	0.00
END OF TANGENT										
4,583.76	30.72	112.23	4,139.77	809.23	-663.67	1,624.04	98.23	0.00	0.00	0.00
Sussex Sandstone										
4,592.16	30.55	112.23	4,147.00	802.00	-665.29	1,628.01	98.47	2.00	-2.00	0.00
4,600.00	30.39	112.23	4,153.76	795.24	-666.79	1,631.69	98.69	2.00	-2.00	0.00
4,700.00	28.39	112.23	4,240.88	708.12	-685.36	1,677.11	101.44	2.00	-2.00	0.00
4,800.00	26.39	112.23	4,329.67	619.33	-702.76	1,719.70	104.01	2.00	-2.00	0.00
4,900.00	24.39	112.23	4,420.00	529.00	-718.98	1,759.39	106.41	2.00	-2.00	0.00
5,000.00	22.39	112.23	4,511.78	437.22	-734.00	1,796.14	108.64	2.00	-2.00	0.00
5,100.00	20.39	112.23	4,604.89	344.11	-747.79	1,829.90	110.68	2.00	-2.00	0.00
Shannon Sandstone										
5,196.62	18.46	112.23	4,696.00	253.00	-759.95	1,859.64	112.48	2.00	-2.00	0.00
5,200.00	18.39	112.23	4,699.21	249.79	-760.35	1,860.63	112.54	2.00	-2.00	0.00
5,300.00	16.39	112.23	4,794.63	154.37	-771.66	1,888.30	114.21	2.00	-2.00	0.00
5,400.00	14.39	112.23	4,891.04	57.96	-781.70	1,912.86	115.70	2.00	-2.00	0.00
5,500.00	12.39	112.23	4,988.32	-39.32	-790.46	1,934.30	116.99	2.00	-2.00	0.00
5,600.00	10.39	112.23	5,086.35	-137.35	-797.93	1,952.58	118.10	2.00	-2.00	0.00
5,700.00	8.39	112.23	5,185.00	-236.00	-804.10	1,967.68	119.01	2.00	-2.00	0.00
5,800.00	6.39	112.23	5,284.16	-335.16	-808.97	1,979.59	119.73	2.00	-2.00	0.00
5,900.00	4.39	112.23	5,383.72	-434.72	-812.52	1,988.29	120.26	2.00	-2.00	0.00
6,000.00	2.39	112.23	5,483.54	-534.54	-814.76	1,993.76	120.59	2.00	-2.00	0.00
TeePee Buttes										
6,019.48	2.00	112.23	5,503.00	-554.00	-815.04	1,994.45	120.63	2.00	-2.00	0.00
6,100.00	0.39	112.23	5,583.50	-634.50	-815.67	1,996.01	120.72	2.00	-2.00	0.00
EOD TO VERTICAL										
6,119.54	0.00	0.00	5,603.04	-654.04	-815.70	1,996.07	120.73	2.00	-2.00	0.00
6,200.00	0.00	0.00	5,683.50	-734.50	-815.70	1,996.07	120.73	0.00	0.00	0.00
KOP (10°/100ft BUR)										
6,219.54	0.00	0.00	5,703.04	-754.04	-815.70	1,996.07	120.73	0.00	0.00	0.00
6,300.00	8.05	1.38	5,783.24	-834.24	-810.06	1,996.21	125.88	10.00	10.00	0.00
6,400.00	18.05	1.38	5,880.53	-931.53	-787.52	1,996.75	146.47	10.00	10.00	0.00
6,500.00	28.05	1.38	5,972.44	-1,023.44	-748.44	1,997.69	182.17	10.00	10.00	0.00
6,600.00	38.05	1.38	6,056.15	-1,107.15	-693.99	1,999.00	231.90	10.00	10.00	0.00
Sharon Springs										
6,644.37	42.48	1.38	6,090.00	-1,141.00	-665.33	1,999.69	258.08	10.00	10.00	0.00
6,700.00	48.05	1.38	6,129.14	-1,180.14	-625.84	2,000.64	294.15	10.00	10.00	0.00
Niobrara Top										
6,705.81	48.63	1.38	6,133.00	-1,184.00	-621.50	2,000.75	298.11	10.00	10.00	0.00
Niobrara A Chalk										
6,750.16	53.05	1.38	6,161.00	-1,212.00	-587.13	2,001.58	329.51	9.96	9.96	0.00
6,800.00	58.05	1.38	6,189.18	-1,240.18	-546.05	2,002.56	367.03	10.03	10.03	0.00
Niobrara A Chalk Base										
6,801.55	58.20	1.38	6,190.00	-1,241.00	-544.73	2,002.60	368.23	10.00	10.00	0.00
Niobrara B1 Chalk Top										
6,866.44	64.69	1.38	6,221.00	-1,272.00	-487.79	2,003.97	420.25	10.00	10.00	0.00
6,900.00	68.05	1.38	6,234.45	-1,285.45	-457.05	2,004.71	448.32	10.00	10.00	0.00
Niobrara B1 Chalk Base										

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CINNAMON TEAL 35-13HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB 25' @ 4949.00usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB 25' @ 4949.00usft
Site:	SE SW SEC. 35 T8N R60W 6th P.M.	North Reference:	True
Well:	CINNAMON TEAL 35-13HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

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)
6,946.27	72.67	1.38	6,250.00	-1,301.00	-413.50	2,005.76	488.10	10.00	10.00	0.00
7,000.00	78.05	1.38	6,263.57	-1,314.57	-361.55	2,007.01	535.55	10.00	10.00	0.00
7,100.00	88.05	1.38	6,275.67	-1,326.67	-262.44	2,009.40	626.08	10.00	10.00	0.00
HZ LP: 300ft FSL & 1100ft FEL of Sec 35 - Niobrara B2 Chalk Top (Target)										
7,119.54	90.00	1.38	6,276.00	-1,327.00	-242.91	2,009.87	643.92	10.00	10.00	0.00
7,200.00	90.00	1.38	6,276.00	-1,327.00	-162.47	2,011.80	717.39	0.00	0.00	0.00
7,300.00	90.00	1.38	6,276.00	-1,327.00	-62.50	2,014.21	808.70	0.00	0.00	0.00
7,400.00	90.00	1.38	6,276.00	-1,327.00	37.47	2,016.62	900.02	0.00	0.00	0.00
7,500.00	90.00	1.38	6,276.00	-1,327.00	137.44	2,019.03	991.33	0.00	0.00	0.00
7,600.00	90.00	1.38	6,276.00	-1,327.00	237.41	2,021.44	1,082.64	0.00	0.00	0.00
7,700.00	90.00	1.38	6,276.00	-1,327.00	337.38	2,023.84	1,173.96	0.00	0.00	0.00
7,800.00	90.00	1.38	6,276.01	-1,327.01	437.36	2,026.25	1,265.27	0.00	0.00	0.00
7,900.00	90.00	1.38	6,276.01	-1,327.01	537.33	2,028.66	1,356.59	0.00	0.00	0.00
8,000.00	90.00	1.38	6,276.01	-1,327.01	637.30	2,031.07	1,447.90	0.00	0.00	0.00
8,100.00	90.00	1.38	6,276.01	-1,327.01	737.27	2,033.48	1,539.21	0.00	0.00	0.00
8,200.00	90.00	1.38	6,276.01	-1,327.01	837.24	2,035.88	1,630.53	0.00	0.00	0.00
8,300.00	90.00	1.38	6,276.01	-1,327.01	937.21	2,038.29	1,721.84	0.00	0.00	0.00
8,400.00	90.00	1.38	6,276.01	-1,327.01	1,037.18	2,040.70	1,813.16	0.00	0.00	0.00
8,500.00	90.00	1.38	6,276.01	-1,327.01	1,137.15	2,043.11	1,904.47	0.00	0.00	0.00
8,600.00	90.00	1.38	6,276.01	-1,327.01	1,237.12	2,045.52	1,995.78	0.00	0.00	0.00
8,700.00	90.00	1.38	6,276.01	-1,327.01	1,337.09	2,047.92	2,087.10	0.00	0.00	0.00
8,800.00	90.00	1.38	6,276.01	-1,327.01	1,437.07	2,050.33	2,178.41	0.00	0.00	0.00
8,900.00	90.00	1.38	6,276.01	-1,327.01	1,537.04	2,052.74	2,269.72	0.00	0.00	0.00
9,000.00	90.00	1.38	6,276.01	-1,327.01	1,637.01	2,055.15	2,361.04	0.00	0.00	0.00
9,100.00	90.00	1.38	6,276.02	-1,327.02	1,736.98	2,057.55	2,452.35	0.00	0.00	0.00
9,200.00	90.00	1.38	6,276.02	-1,327.02	1,836.95	2,059.96	2,543.67	0.00	0.00	0.00
9,300.00	90.00	1.38	6,276.02	-1,327.02	1,936.92	2,062.37	2,634.98	0.00	0.00	0.00
9,400.00	90.00	1.38	6,276.02	-1,327.02	2,036.89	2,064.78	2,726.29	0.00	0.00	0.00
9,500.00	90.00	1.38	6,276.02	-1,327.02	2,136.86	2,067.19	2,817.61	0.00	0.00	0.00
9,600.00	90.00	1.38	6,276.02	-1,327.02	2,236.83	2,069.59	2,908.92	0.00	0.00	0.00
9,700.00	90.00	1.38	6,276.02	-1,327.02	2,336.80	2,072.00	3,000.23	0.00	0.00	0.00
9,800.00	90.00	1.38	6,276.02	-1,327.02	2,436.78	2,074.41	3,091.55	0.00	0.00	0.00
9,900.00	90.00	1.38	6,276.02	-1,327.02	2,536.75	2,076.82	3,182.86	0.00	0.00	0.00
10,000.00	90.00	1.38	6,276.02	-1,327.02	2,636.72	2,079.23	3,274.18	0.00	0.00	0.00
10,100.00	90.00	1.38	6,276.02	-1,327.02	2,736.69	2,081.63	3,365.49	0.00	0.00	0.00
10,200.00	90.00	1.38	6,276.02	-1,327.02	2,836.66	2,084.04	3,456.80	0.00	0.00	0.00
10,300.00	90.00	1.38	6,276.02	-1,327.02	2,936.63	2,086.45	3,548.12	0.00	0.00	0.00
10,400.00	90.00	1.38	6,276.03	-1,327.03	3,036.60	2,088.86	3,639.43	0.00	0.00	0.00
10,500.00	90.00	1.38	6,276.03	-1,327.03	3,136.57	2,091.27	3,730.75	0.00	0.00	0.00
10,600.00	90.00	1.38	6,276.03	-1,327.03	3,236.54	2,093.67	3,822.06	0.00	0.00	0.00
10,700.00	90.00	1.38	6,276.03	-1,327.03	3,336.51	2,096.08	3,913.37	0.00	0.00	0.00
10,800.00	90.00	1.38	6,276.03	-1,327.03	3,436.49	2,098.49	4,004.69	0.00	0.00	0.00
10,900.00	90.00	1.38	6,276.03	-1,327.03	3,536.46	2,100.90	4,096.00	0.00	0.00	0.00
11,000.00	90.00	1.38	6,276.03	-1,327.03	3,636.43	2,103.31	4,187.31	0.00	0.00	0.00
11,100.00	90.00	1.38	6,276.03	-1,327.03	3,736.40	2,105.71	4,278.63	0.00	0.00	0.00
11,200.00	90.00	1.38	6,276.03	-1,327.03	3,836.37	2,108.12	4,369.94	0.00	0.00	0.00
11,300.00	90.00	1.38	6,276.03	-1,327.03	3,936.34	2,110.53	4,461.26	0.00	0.00	0.00
11,400.00	90.00	1.38	6,276.03	-1,327.03	4,036.31	2,112.94	4,552.57	0.00	0.00	0.00
11,500.00	90.00	1.38	6,276.03	-1,327.03	4,136.28	2,115.35	4,643.88	0.00	0.00	0.00
11,600.00	90.00	1.38	6,276.03	-1,327.03	4,236.25	2,117.75	4,735.20	0.00	0.00	0.00
11,700.00	90.00	1.38	6,276.04	-1,327.04	4,336.22	2,120.16	4,826.51	0.00	0.00	0.00
11,800.00	90.00	1.38	6,276.04	-1,327.04	4,436.20	2,122.57	4,917.82	0.00	0.00	0.00
BHL: 300ft FNL & 1100ft FEL of Sec 35										
11,828.00	90.00	1.38	6,276.00	-1,327.00	4,464.18	2,123.29	4,943.41	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well CINNAMON TEAL 35-13HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB 25' @ 4949.00usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB 25' @ 4949.00usft
Site:	SE SW SEC. 35 T8N R60W 6th P.M.	North Reference:	True
Well:	CINNAMON TEAL 35-13HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

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)

Formations						
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
510.03	510.00	Fox Hills Base				
1,549.61	1,519.00	Pierre Shale Top				
3,606.95	3,300.00	Richard Sandstone				
3,739.56	3,414.00	Parkman Sandstone				
4,592.16	4,147.00	Sussex Sandstone				
5,196.62	4,696.00	Shannon Sandstone				
6,019.48	5,503.00	TeePee Buttes				
6,644.37	6,090.00	Sharon Springs				
6,705.81	6,133.00	Niobrara Top				
6,750.16	6,161.00	Niobrara A Chalk				
6,801.55	6,190.00	Niobrara A Chalk Base				
6,866.44	6,221.00	Niobrara B1 Chalk Top				
6,946.27	6,250.00	Niobrara B1 Chalk Base				
7,119.54	6,276.00	Niobrara B2 Chalk Top (Target)				

Plan Annotations				
MD (usft)	TVD (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
0.00	0.00	0.00	0.00	SHL: 550ft FSL & 2160ft FWL of Sec 35
400.00	400.00	0.00	0.00	START NUDGE (2°/100ft BUR)
1,935.78	1,863.27	-152.03	372.03	EOB TO 30.72° INC
4,583.76	4,139.77	-663.67	1,624.04	END OF TANGENT
6,119.54	5,603.04	-815.70	1,996.07	EOD TO VERTICAL
6,219.54	5,703.04	-815.70	1,996.07	KOP (10°/100ft BUR)
7,119.54	6,276.00	-242.91	2,009.87	HZ LP: 300ft FSL & 1100ft FEL of Sec 35
11,828.00	6,276.00	4,464.18	2,123.29	BHL: 300ft FNL & 1100ft FEL of Sec 35