

EXTRACTION OIL & GAS

WELD COUNTY, COLORADO (NAD 83)

SW SW SEC. 22 T4N R68W 6th P.M.

HFE 6

ORIGINAL WELLBORE

31 May, 2017

Plan: PROPOSAL #4

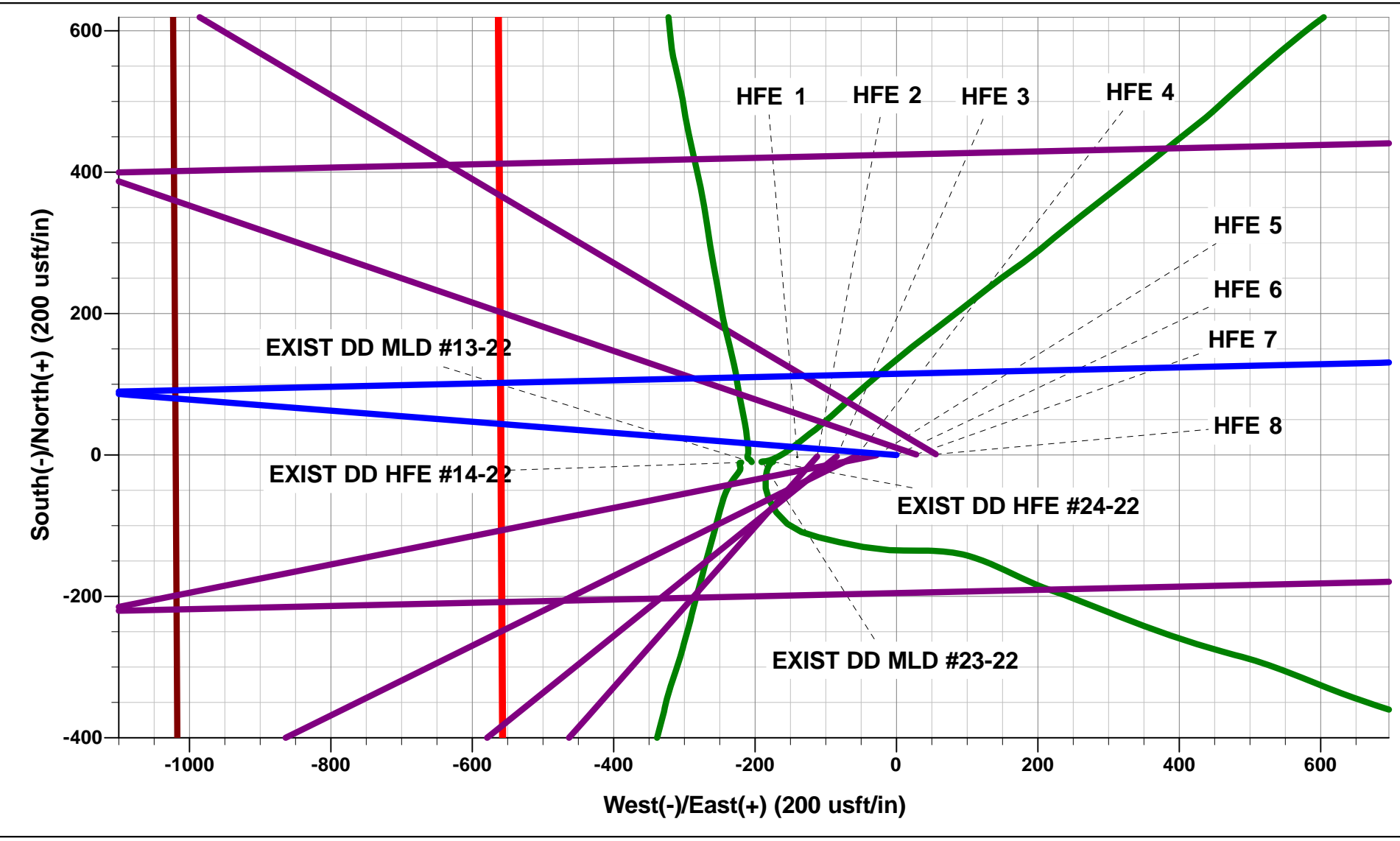




Project: WELD COUNTY, COLORADO (NAD 83)
Site: SW SW SEC. 22 T4N R68W 6th P.M.
Well: HFE 6
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #4

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: 1125ft FSL & 1019ft FWL of Sec 22	
2100.0	2100.0	0.00	0.00	0.0	0.0	0.0	0.0	START NUDGE (2°/100ft BUR)	
2968.3	2982.2	17.64	274.49	10.5	-134.4	-133.6	134.8	EOB TO 17.64° INC	
5693.8	5842.2	17.64	274.49	78.4	-998.6	-993.0	1001.6	END OF TANGENT	
6562.1	6724.4	0.00	0.00	88.9	-1132.9	-1126.6	1136.4	EOD TO VERTICAL	
6592.1	6754.4	0.00	0.00	88.9	-1132.9	-1126.6	1136.4	KOP (10°/100ft BUR)	
7165.0	7654.3	90.00	88.69	102.0	-560.1	-554.0	1709.3	HZ LP: 1240ft FSL & 460ft FWL of Sec 22	
7165.0	12047.6	90.00	88.70	202.1	3832.0	3837.3	6102.5	BHL: 1240ft FSL & 460ft FEL of Sec 22	

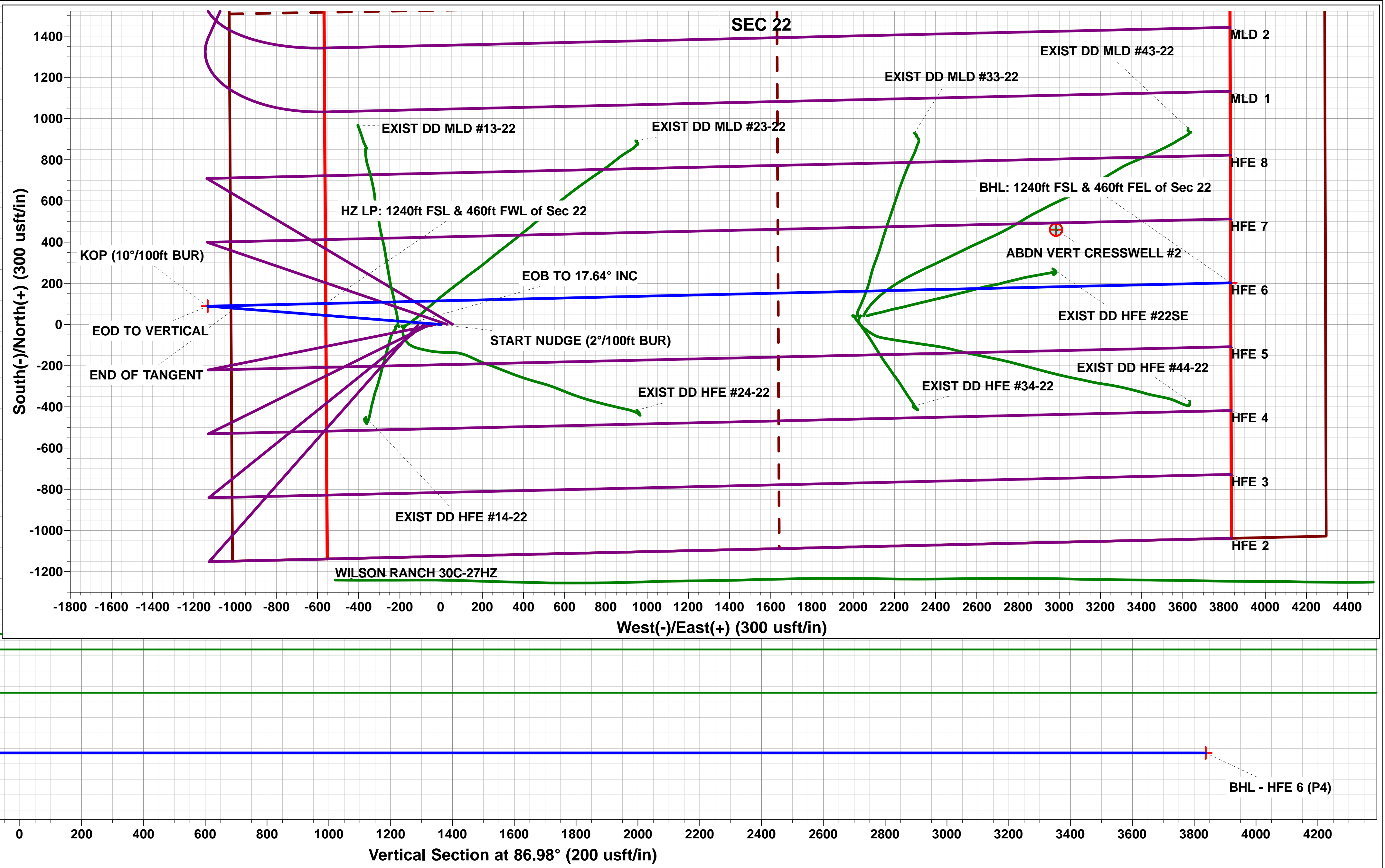
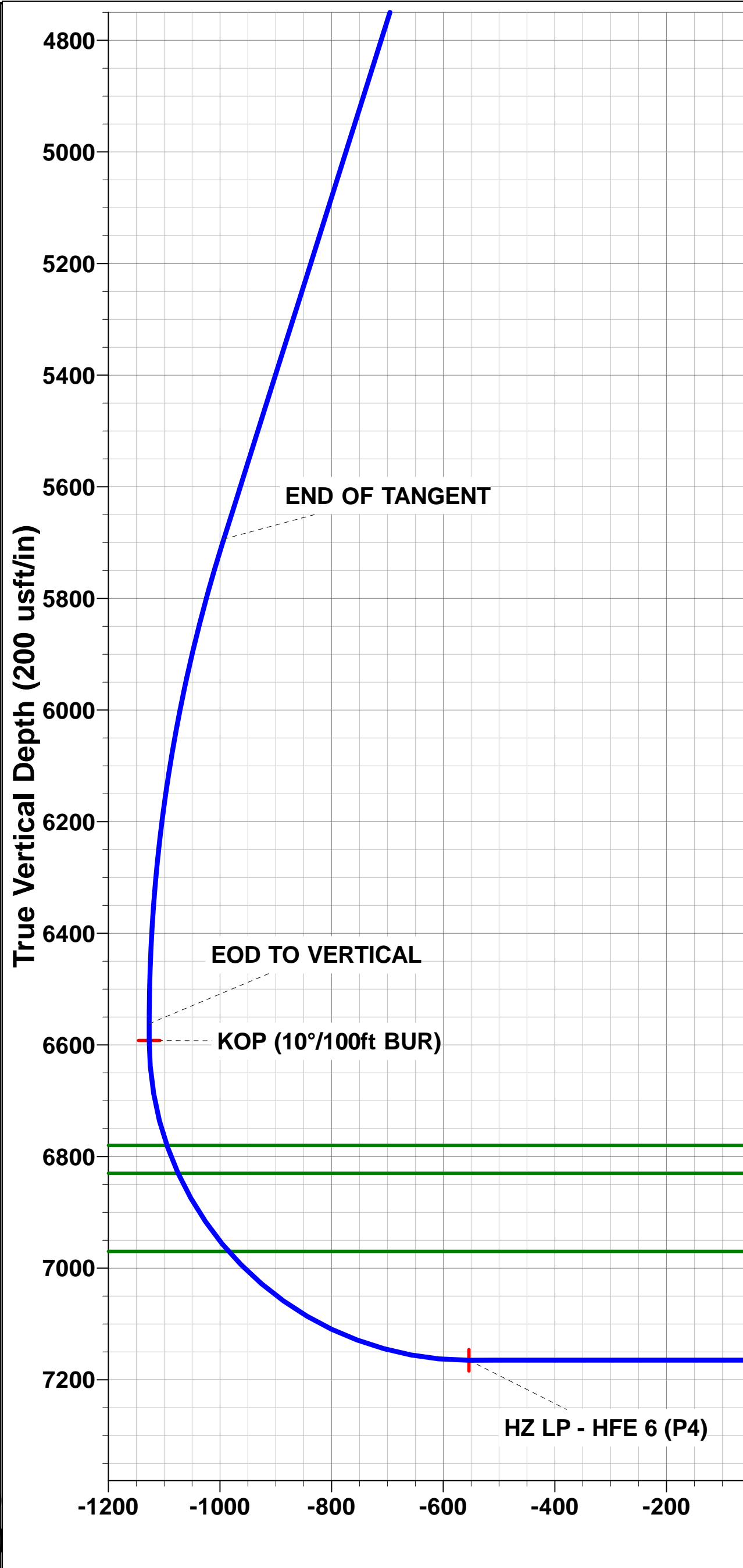
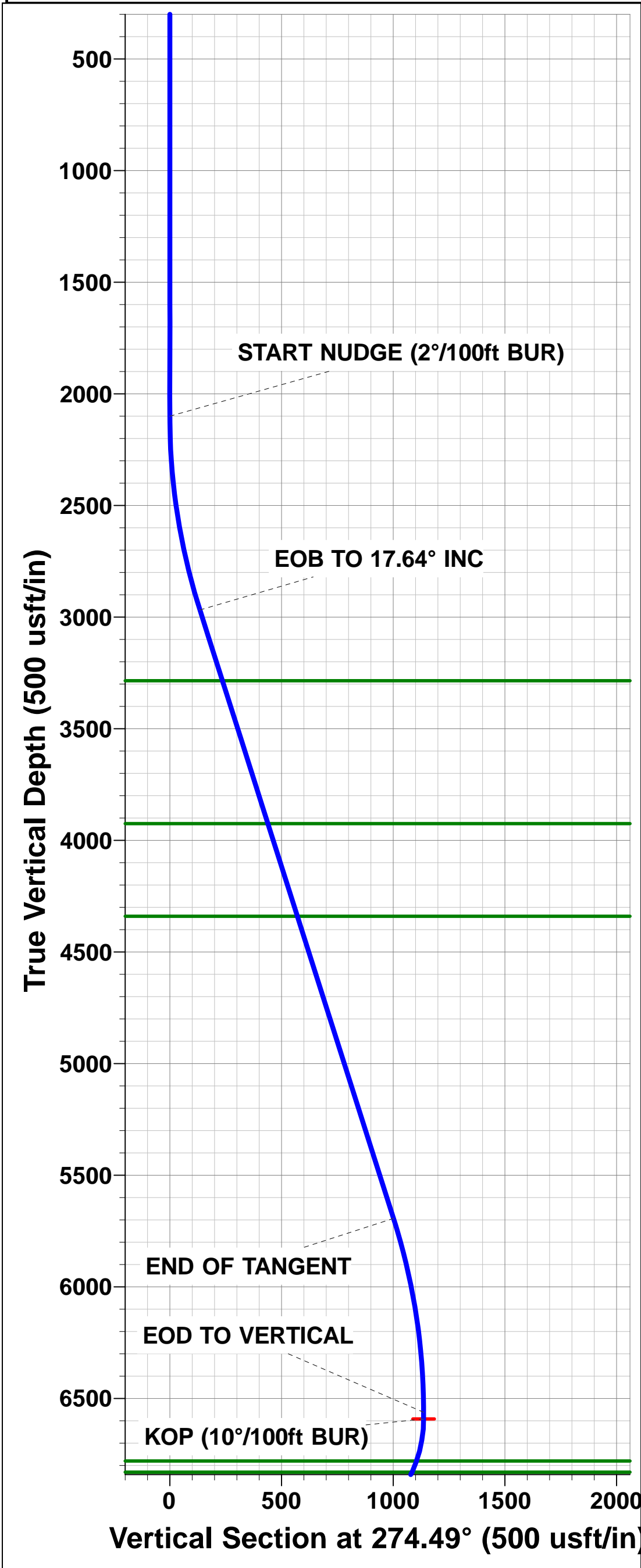
WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - HFE 6 (P4)	6592.1	88.9	-1132.9	40.294965	-104.999167
HZ LP - HFE 6 (P4)	7165.0	102.0	-560.1	40.295001	-104.997114
BHL - HFE 6 (P4)	7165.0	202.1	3832.0	40.295275	-104.981369



FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
3285.0	3314.5	PARKMAN
3925.0	3986.1	SUSSEX
4340.0	4421.6	SHANNON
6780.0	6945.8	SHARON SPRINGS
6830.0	6999.7	NIOBRARA
6970.0	7167.1	NIO C TOP

PROPOSED LOCAL COORDINATES:		
SHL: 1125ft FSL & 1019ft FWL of Sec 29		
HZ LP: 1240ft FSL & 460ft FWL of Sec 22		
BHL: 1240ft FSL & 460ft FEL of Sec 22		

Azimuths to True North	
Magnetic North: 8.33°	
Magnetic Field	
Strength: 52317.6snT	
Dip Angle: 66.74°	
Date: 31/05/2017	
Model: IGRF2015	



Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well HFE 6
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB-EST @ 4934.0usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4934.0usft
Site:	SW SW SEC. 22 T4N R68W 6th P.M.	North Reference:	True
Well:	HFE 6	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #4		

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	SW SW SEC. 22 T4N R68W 6th P.M.		
Site Position:		Northing:	1,350,393.80 usft
From:	Lat/Long	Easting:	3,140,798.83 usft
Position Uncertainty:	0.0 usft	Slot Radius:	1.10000ft
		Latitude:	40.294131
		Longitude:	-104.995243
		Grid Convergence:	0.33 °

Well	HFE 6		
Well Position	+N/-S	214.9 usft	Northing: 1,350,608.94 usft
	+E/-W	38.2 usft	Easting: 3,140,835.82 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	40.294721
		Longitude:	-104.995106
		Ground Level:	4,918.0 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	31/05/2017	8.33	66.74	52,318

Design	PROPOSAL #4			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	7,165.0	0.0	0.0	86.98

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	-4,934.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,100.0	0.00	0.00	2,100.0	-2,834.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,982.2	17.64	274.49	2,968.3	-1,965.7	10.5	-134.3	2.00	2.00	0.00	274.49	
5,842.2	17.64	274.49	5,693.8	759.8	78.4	-998.6	0.00	0.00	0.00	0.00	
6,724.4	0.00	0.00	6,562.1	1,628.1	88.9	-1,132.9	2.00	-2.00	0.00	180.00	
6,754.4	0.00	0.00	6,592.1	1,658.1	88.9	-1,132.9	0.00	0.00	0.00	0.00	KOP - HFE 6 (P4)
7,654.3	90.00	88.69	7,165.0	2,231.0	102.0	-560.1	10.00	10.00	9.86	88.69	HZ LP - HFE 6 (P4)
12,047.6	90.00	88.70	7,165.0	2,231.0	202.1	3,832.0	0.00	0.00	0.00	99.87	BHL - HFE 6 (P4)

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well HFE 6
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB-EST @ 4934.0usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4934.0usft
Site:	SW SW SEC. 22 T4N R68W 6th P.M.	North Reference:	True
Well:	HFE 6	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #4		

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: 1125ft FSL & 1019ft FWL of Sec 22										
0.0	0.00	0.00	0.0	4,934.00	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	4,834.00	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	4,734.00	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	4,634.00	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	4,534.00	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	4,434.00	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	4,334.00	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	4,234.00	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	4,134.00	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	4,034.00	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	3,934.00	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	3,834.00	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	3,734.00	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	3,634.00	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	3,534.00	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	3,434.00	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	3,334.00	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	3,234.00	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	3,134.00	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	3,034.00	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	2,934.00	0.0	0.0	0.0	0.00	0.00	0.00
START NUDGE (2°/100ft BUR)										
2,100.0	0.00	0.00	2,100.0	2,834.00	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	2.00	274.49	2,200.0	2,734.02	0.1	-1.7	-1.7	2.00	2.00	0.00
2,300.0	4.00	274.49	2,299.8	2,634.16	0.5	-7.0	-6.9	2.00	2.00	0.00
2,400.0	6.00	274.49	2,399.5	2,534.55	1.2	-15.6	-15.6	2.00	2.00	0.00
2,500.0	8.00	274.49	2,498.7	2,435.30	2.2	-27.8	-27.6	2.00	2.00	0.00
2,600.0	10.00	274.49	2,597.5	2,336.53	3.4	-43.4	-43.1	2.00	2.00	0.00
2,700.0	12.00	274.49	2,695.6	2,238.38	4.9	-62.4	-62.1	2.00	2.00	0.00
2,800.0	14.00	274.49	2,793.1	2,140.94	6.7	-84.8	-84.4	2.00	2.00	0.00
2,900.0	16.00	274.49	2,889.6	2,044.36	8.7	-110.6	-110.0	2.00	2.00	0.00
EOB TO 17.64° INC										
2,982.2	17.64	274.49	2,968.3	1,965.68	10.5	-134.4	-133.6	2.00	2.00	0.00
3,000.0	17.64	274.49	2,985.3	1,948.71	11.0	-139.7	-139.0	0.00	0.00	0.00
3,100.0	17.64	274.49	3,080.6	1,853.42	13.3	-169.9	-169.0	0.00	0.00	0.00
3,200.0	17.64	274.49	3,175.9	1,758.12	15.7	-200.2	-199.1	0.00	0.00	0.00
3,300.0	17.64	274.49	3,271.2	1,662.83	18.1	-230.4	-229.1	0.00	0.00	0.00
PARKMAN										
3,314.5	17.64	274.49	3,285.0	1,649.00	18.4	-234.8	-233.5	0.00	0.00	0.00
3,400.0	17.64	274.49	3,366.5	1,567.53	20.4	-260.6	-259.2	0.00	0.00	0.00
3,500.0	17.64	274.49	3,461.8	1,472.23	22.8	-290.8	-289.2	0.00	0.00	0.00
3,600.0	17.64	274.49	3,557.1	1,376.94	25.2	-321.0	-319.3	0.00	0.00	0.00
3,700.0	17.64	274.49	3,652.4	1,281.64	27.6	-351.2	-349.3	0.00	0.00	0.00
3,800.0	17.64	274.49	3,747.7	1,186.35	29.9	-381.5	-379.4	0.00	0.00	0.00
3,900.0	17.64	274.49	3,842.9	1,091.05	32.3	-411.7	-409.4	0.00	0.00	0.00
SUSSEX										
3,986.1	17.64	274.49	3,925.0	1,009.00	34.3	-437.7	-435.3	0.00	0.00	0.00
4,000.0	17.64	274.49	3,938.2	995.75	34.7	-441.9	-439.5	0.00	0.00	0.00
4,100.0	17.64	274.49	4,033.5	900.46	37.0	-472.1	-469.5	0.00	0.00	0.00
4,200.0	17.64	274.49	4,128.8	805.16	39.4	-502.3	-499.6	0.00	0.00	0.00
4,300.0	17.64	274.49	4,224.1	709.87	41.8	-532.5	-529.6	0.00	0.00	0.00
4,400.0	17.64	274.49	4,319.4	614.57	44.2	-562.8	-559.7	0.00	0.00	0.00

Planning Report



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Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4934.0usft
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Well:	HFE 6	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #4		

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)
SHANNON										
4,421.6	17.64	274.49	4,340.0	594.00	44.7	-569.3	-566.1	0.00	0.00	0.00
4,500.0	17.64	274.49	4,414.7	519.27	46.5	-593.0	-589.7	0.00	0.00	0.00
4,600.0	17.64	274.49	4,510.0	423.98	48.9	-623.2	-619.8	0.00	0.00	0.00
4,700.0	17.64	274.49	4,605.3	328.68	51.3	-653.4	-649.8	0.00	0.00	0.00
4,800.0	17.64	274.49	4,700.6	233.39	53.6	-683.6	-679.9	0.00	0.00	0.00
4,900.0	17.64	274.49	4,795.9	138.09	56.0	-713.8	-709.9	0.00	0.00	0.00
5,000.0	17.64	274.49	4,891.2	42.79	58.4	-744.1	-740.0	0.00	0.00	0.00
5,100.0	17.64	274.49	4,986.5	-52.50	60.8	-774.3	-770.0	0.00	0.00	0.00
5,200.0	17.64	274.49	5,081.8	-147.80	63.1	-804.5	-800.1	0.00	0.00	0.00
5,300.0	17.64	274.49	5,177.1	-243.09	65.5	-834.7	-830.1	0.00	0.00	0.00
5,400.0	17.64	274.49	5,272.4	-338.39	67.9	-864.9	-860.2	0.00	0.00	0.00
5,500.0	17.64	274.49	5,367.7	-433.68	70.2	-895.1	-890.2	0.00	0.00	0.00
5,600.0	17.64	274.49	5,463.0	-528.98	72.6	-925.4	-920.3	0.00	0.00	0.00
5,700.0	17.64	274.49	5,558.3	-624.28	75.0	-955.6	-950.3	0.00	0.00	0.00
5,800.0	17.64	274.49	5,653.6	-719.57	77.4	-985.8	-980.4	0.00	0.00	0.00
END OF TANGENT										
5,842.2	17.64	274.49	5,693.8	-759.79	78.4	-998.6	-993.0	0.00	0.00	0.00
5,900.0	16.49	274.49	5,749.0	-815.04	79.7	-1,015.5	-1,009.9	2.00	-2.00	0.00
6,000.0	14.49	274.49	5,845.4	-911.41	81.8	-1,042.1	-1,036.3	2.00	-2.00	0.00
6,100.0	12.49	274.49	5,942.6	-1,008.64	83.6	-1,065.3	-1,059.5	2.00	-2.00	0.00
6,200.0	10.49	274.49	6,040.6	-1,106.63	85.2	-1,085.2	-1,079.2	2.00	-2.00	0.00
6,300.0	8.49	274.49	6,139.3	-1,205.26	86.4	-1,101.6	-1,095.5	2.00	-2.00	0.00
6,400.0	6.49	274.49	6,238.4	-1,304.40	87.5	-1,114.6	-1,108.5	2.00	-2.00	0.00
6,500.0	4.49	274.49	6,337.9	-1,403.94	88.2	-1,124.1	-1,117.9	2.00	-2.00	0.00
6,600.0	2.49	274.49	6,437.8	-1,503.75	88.7	-1,130.2	-1,124.0	2.00	-2.00	0.00
6,700.0	0.49	274.49	6,537.7	-1,603.71	88.9	-1,132.8	-1,126.5	2.00	-2.00	0.00
EOD TO VERTICAL										
6,724.4	0.00	0.00	6,562.1	-1,628.11	88.9	-1,132.9	-1,126.6	2.00	-2.00	0.00
KOP (10°/100ft BUR)										
6,754.4	0.00	0.00	6,592.1	-1,658.11	88.9	-1,132.9	-1,126.6	0.00	0.00	0.00
6,800.0	4.56	88.69	6,637.7	-1,703.66	88.9	-1,131.1	-1,124.8	10.00	10.00	0.00
6,900.0	14.56	88.69	6,736.1	-1,802.15	89.3	-1,114.5	-1,108.2	10.00	10.00	0.00
SHARON SPRINGS										
6,945.8	19.15	88.69	6,780.0	-1,846.00	89.6	-1,101.2	-1,095.0	10.00	10.00	0.00
NIOBRARA										
6,999.7	24.54	88.69	6,830.0	-1,896.00	90.1	-1,081.2	-1,074.9	10.00	10.00	0.00
7,000.0	24.56	88.69	6,830.3	-1,896.26	90.1	-1,081.1	-1,074.8	10.00	10.00	0.00
7,100.0	34.56	88.69	6,917.1	-1,983.13	91.2	-1,031.8	-1,025.6	10.00	10.00	0.00
NIO C TOP										
7,167.1	41.27	88.69	6,970.0	-2,036.00	92.2	-990.6	-984.4	10.00	10.00	0.00
7,200.0	44.57	88.69	6,994.1	-2,060.12	92.7	-968.2	-962.0	10.00	10.00	0.00
7,300.0	54.57	88.69	7,058.9	-2,124.89	94.4	-892.2	-886.0	10.00	10.00	0.00
7,400.0	64.57	88.69	7,109.5	-2,175.48	96.4	-806.1	-799.9	10.00	10.00	0.00
7,500.0	74.57	88.69	7,144.3	-2,210.35	98.5	-712.5	-706.4	10.00	10.00	0.00
7,600.0	84.57	88.69	7,162.4	-2,228.43	100.8	-614.4	-608.2	10.00	10.00	0.00
HZ LP: 1240ft FSL & 460ft FWL of Sec 22										
7,654.3	90.00	88.69	7,165.0	-2,231.00	102.0	-560.1	-554.0	10.00	10.00	0.00
7,700.0	90.00	88.69	7,165.0	-2,231.00	103.1	-514.5	-508.3	0.00	0.00	0.00
7,800.0	90.00	88.69	7,165.0	-2,231.00	105.4	-414.5	-408.4	0.00	0.00	0.00
7,900.0	90.00	88.69	7,165.0	-2,231.00	107.6	-314.5	-308.4	0.00	0.00	0.00
8,000.0	90.00	88.69	7,165.0	-2,230.99	109.9	-214.5	-208.5	0.00	0.00	0.00
8,100.0	90.00	88.69	7,165.0	-2,230.99	112.2	-114.6	-108.5	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well HFE 6
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB-EST @ 4934.0usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4934.0usft
Site:	SW SW SEC. 22 T4N R68W 6th P.M.	North Reference:	True
Well:	HFE 6	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #4		

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)
8,200.0	90.00	88.69	7,165.0	-2,230.99	114.5	-14.6	-8.5	0.00	0.00	0.00
8,300.0	90.00	88.69	7,165.0	-2,230.99	116.8	85.4	91.4	0.00	0.00	0.00
8,400.0	90.00	88.69	7,165.0	-2,230.99	119.1	185.4	191.4	0.00	0.00	0.00
8,500.0	90.00	88.69	7,165.0	-2,230.99	121.4	285.3	291.3	0.00	0.00	0.00
8,600.0	90.00	88.69	7,165.0	-2,230.99	123.7	385.3	391.3	0.00	0.00	0.00
8,700.0	90.00	88.69	7,165.0	-2,230.98	125.9	485.3	491.2	0.00	0.00	0.00
8,800.0	90.00	88.69	7,165.0	-2,230.98	128.2	585.3	591.2	0.00	0.00	0.00
8,900.0	90.00	88.69	7,165.0	-2,230.98	130.5	685.2	691.1	0.00	0.00	0.00
9,000.0	90.00	88.69	7,165.0	-2,230.98	132.8	785.2	791.1	0.00	0.00	0.00
9,100.0	90.00	88.69	7,165.0	-2,230.98	135.1	885.2	891.1	0.00	0.00	0.00
9,200.0	90.00	88.69	7,165.0	-2,230.98	137.4	985.1	991.0	0.00	0.00	0.00
9,300.0	90.00	88.69	7,165.0	-2,230.98	139.6	1,085.1	1,091.0	0.00	0.00	0.00
9,400.0	90.00	88.69	7,165.0	-2,230.98	141.9	1,185.1	1,190.9	0.00	0.00	0.00
9,500.0	90.00	88.69	7,165.0	-2,230.98	144.2	1,285.1	1,290.9	0.00	0.00	0.00
9,600.0	90.00	88.69	7,165.0	-2,230.98	146.5	1,385.0	1,390.8	0.00	0.00	0.00
9,700.0	90.00	88.69	7,165.0	-2,230.98	148.8	1,485.0	1,490.8	0.00	0.00	0.00
9,800.0	90.00	88.69	7,165.0	-2,230.98	151.0	1,585.0	1,590.7	0.00	0.00	0.00
9,900.0	90.00	88.69	7,165.0	-2,230.98	153.3	1,685.0	1,690.7	0.00	0.00	0.00
10,000.0	90.00	88.69	7,165.0	-2,230.98	155.6	1,784.9	1,790.7	0.00	0.00	0.00
10,100.0	90.00	88.70	7,165.0	-2,230.98	157.9	1,884.9	1,890.6	0.00	0.00	0.00
10,200.0	90.00	88.70	7,165.0	-2,230.98	160.2	1,984.9	1,990.6	0.00	0.00	0.00
10,300.0	90.00	88.70	7,165.0	-2,230.98	162.4	2,084.9	2,090.5	0.00	0.00	0.00
10,400.0	90.00	88.70	7,165.0	-2,230.98	164.7	2,184.8	2,190.5	0.00	0.00	0.00
10,500.0	90.00	88.70	7,165.0	-2,230.98	167.0	2,284.8	2,290.4	0.00	0.00	0.00
10,600.0	90.00	88.70	7,165.0	-2,230.98	169.3	2,384.8	2,390.4	0.00	0.00	0.00
10,700.0	90.00	88.70	7,165.0	-2,230.98	171.5	2,484.8	2,490.3	0.00	0.00	0.00
10,800.0	90.00	88.70	7,165.0	-2,230.98	173.8	2,584.7	2,590.3	0.00	0.00	0.00
10,900.0	90.00	88.70	7,165.0	-2,230.98	176.1	2,684.7	2,690.3	0.00	0.00	0.00
11,000.0	90.00	88.70	7,165.0	-2,230.98	178.3	2,784.7	2,790.2	0.00	0.00	0.00
11,100.0	90.00	88.70	7,165.0	-2,230.99	180.6	2,884.7	2,890.2	0.00	0.00	0.00
11,200.0	90.00	88.70	7,165.0	-2,230.99	182.9	2,984.6	2,990.1	0.00	0.00	0.00
11,300.0	90.00	88.70	7,165.0	-2,230.99	185.2	3,084.6	3,090.1	0.00	0.00	0.00
11,400.0	90.00	88.70	7,165.0	-2,230.99	187.4	3,184.6	3,190.0	0.00	0.00	0.00
11,500.0	90.00	88.70	7,165.0	-2,230.99	189.7	3,284.6	3,290.0	0.00	0.00	0.00
11,600.0	90.00	88.70	7,165.0	-2,230.99	192.0	3,384.5	3,389.9	0.00	0.00	0.00
11,700.0	90.00	88.70	7,165.0	-2,230.99	194.2	3,484.5	3,489.9	0.00	0.00	0.00
11,800.0	90.00	88.70	7,165.0	-2,231.00	196.5	3,584.5	3,589.8	0.00	0.00	0.00
11,900.0	90.00	88.70	7,165.0	-2,231.00	198.8	3,684.4	3,689.8	0.00	0.00	0.00
12,000.0	90.00	88.70	7,165.0	-2,231.00	201.1	3,784.4	3,789.8	0.00	0.00	0.00
BHL: 1240ft FSL & 460ft FEL of Sec 22										
12,047.6	90.00	88.70	7,165.0	-2,231.00	202.1	3,832.0	3,837.3	0.00	0.00	0.00

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Site:	SW SW SEC. 22 T4N R68W 6th P.M.	North Reference:	True
Well:	HFE 6	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #4		

Formations					
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,314.5	3,285.0	PARKMAN			
3,986.1	3,925.0	SUSSEX			
4,421.6	4,340.0	SHANNON			
6,945.8	6,780.0	SHARON SPRINGS			
6,999.7	6,830.0	NIOBRARA			
7,167.1	6,970.0	NIO C TOP			

Plan Annotations				
MD (usft)	TVD (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
0.0	0.0	0.0	0.0	SHL: 1125ft FSL & 1019ft FWL of Sec 22
2,100.0	2,100.0	0.0	0.0	START NUDGE (2°/100ft BUR)
2,982.2	2,968.3	10.5	-134.4	EOB TO 17.64° INC
5,842.2	5,693.8	78.4	-998.6	END OF TANGENT
6,724.4	6,562.1	88.9	-1,132.9	EOD TO VERTICAL
6,754.4	6,592.1	88.9	-1,132.9	KOP (10°/100ft BUR)
7,654.3	7,165.0	102.0	-560.1	HZ LP: 1240ft FSL & 460ft FWL of Sec 22
12,047.6	7,165.0	202.1	3,832.0	BHL: 1240ft FSL & 460ft FEL of Sec 22