

EXTRACTION OIL & GAS

WELD COUNTY, COLORADO (NAD 83)

NW SW SEC. 21 T2N R67W 6th P.M.

LEONARD 4N

ORIGINAL WELLBORE

27 March, 2017

Plan: PROPOSAL #1

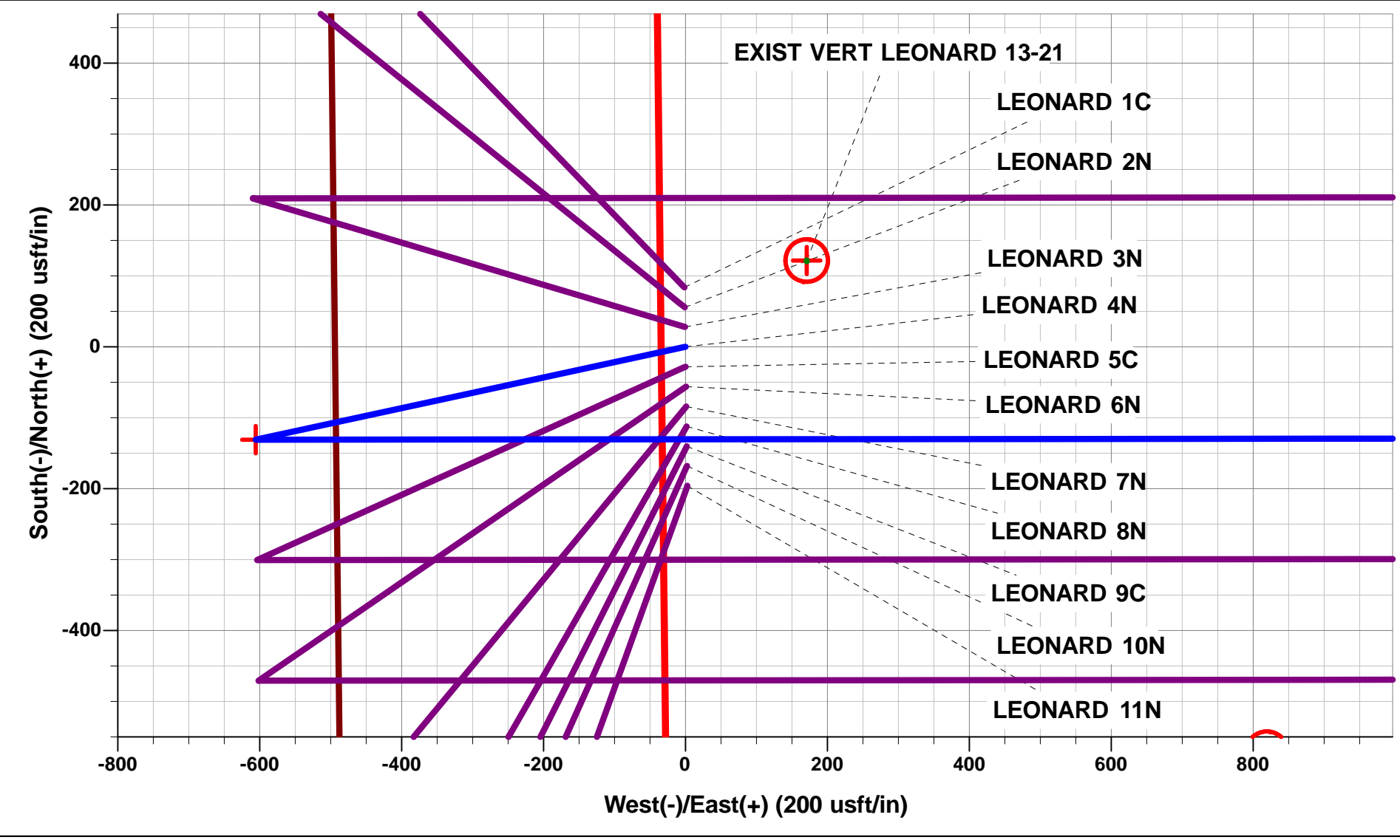




Project: WELD COUNTY, COLORADO (NAD 83)
Site: NW SW SEC. 21 T2N R67W 6th P.M.
Well: LEONARD 4N
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #1

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: 1880ft FSL & 494ft FWL of Sec 21	
800.0	800.0	0.00	0.00	0.0	0.0	0.0	0.0	START NUDGE (2°/100ft BUR)	
1395.4	1399.8	12.00	257.80	-13.2	-61.1	-60.7	62.6	EOB TO 12° INC	
3721.6	3777.9	12.00	257.80	-117.7	-544.3	-540.6	556.8	END OF TANGENT	
4317.0	4377.7	0.00	0.00	-130.9	-605.4	-601.3	619.4	EOD TO VERTICAL	
6887.0	6947.7	0.00	0.00	-130.9	-605.4	-601.3	619.4	KOP (10°/100ft BUR)	
7460.0	7847.7	90.00	89.95	-130.4	-32.4	-28.6	1192.3	HZ LP: 1750ft FSL & 460ft FWL of Sec 21	
7460.0	12205.7	90.00	89.94	-126.4	4325.6	4327.5	5550.4	BHL: 1750ft FSL & 460ft FEL of Sec 21	

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - LEONARD 4N	6887.0	-130.9	-605.4	40.121287	-104.905446
HZ LP - LEONARD 4N	7460.0	-130.4	-32.4	40.121288	-104.903397
BHL - LEONARD 4N	7460.0	-126.4	4325.6	40.121298	-104.887814



FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
3900.0	3959.2	PARKMAN
4718.0	4778.7	SUSSEX
5100.0	5160.7	SHANNON
7391.0	7563.6	NIOBRARA
7460.0	7847.7	NIO B

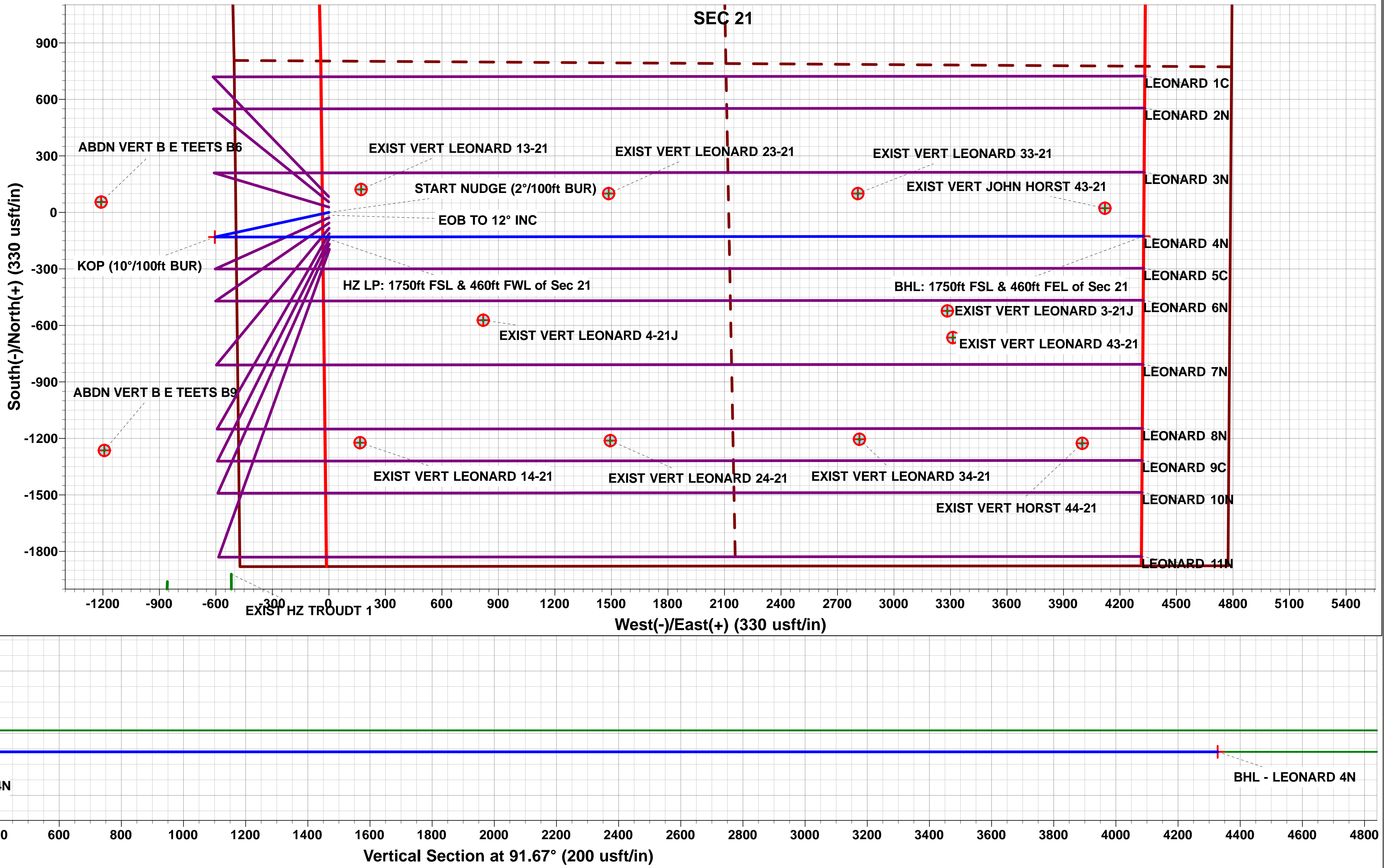
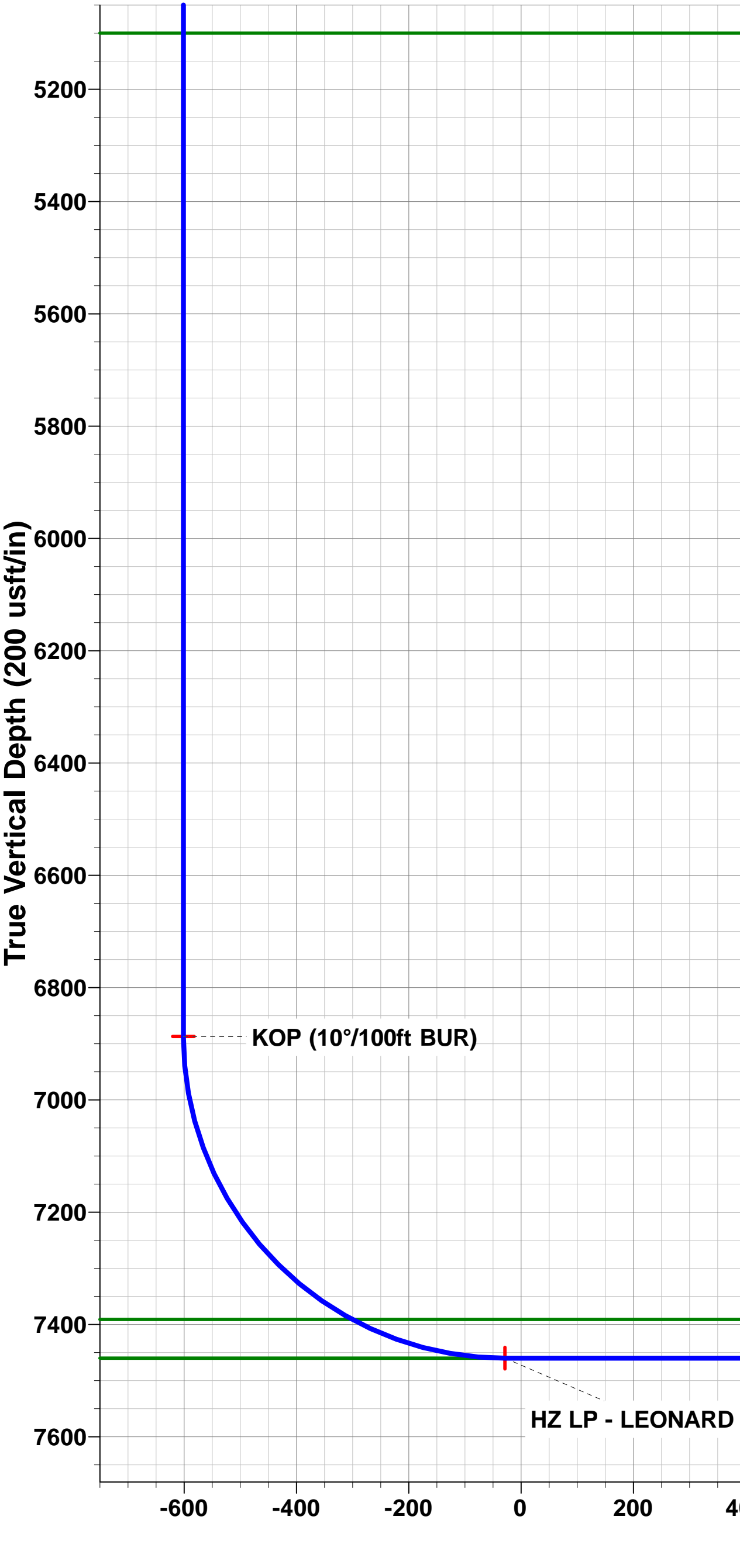
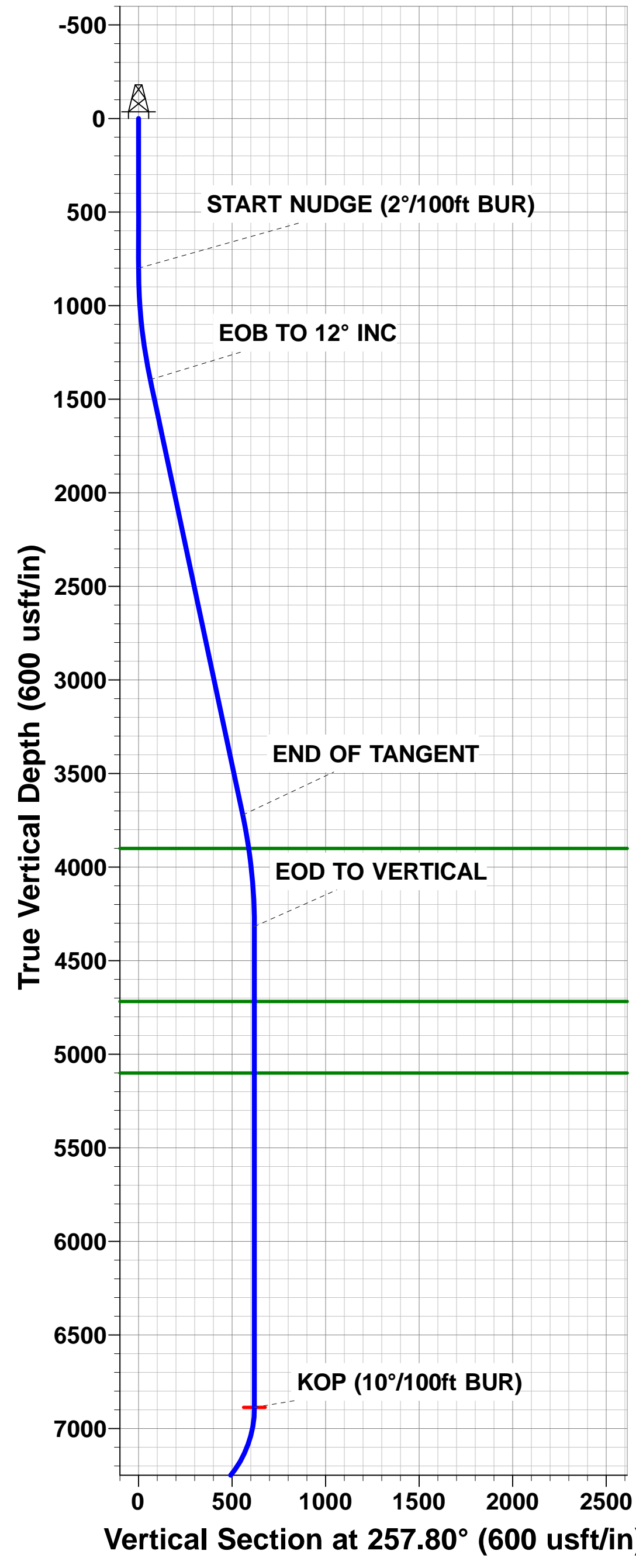
PROPOSED LOCAL COORDINATES:		
SHL: 1880ft FSL & 494ft FWL of Sec 21		
HZ LP: 1750ft FSL & 460ft FWL of Sec 21		
BHL: 1750ft FSL & 460ft FEL of Sec 21		

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M

Azimuths to True North
Magnetic North: 8.32°

Magnetic Field
Strength: 52295.6nT
Dip Angle: 66.62°
Date: 22/11/2016
Model: IGRF2015



Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well LEONARD 4N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB-EST @ 5019.0usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 5019.0usft (Original Well Elev)
Site:	NW SW SEC. 21 T2N R67W 6th P.M.	North Reference:	True
Well:	LEONARD 4N	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	NW SW SEC. 21 T2N R67W 6th P.M.		
Site Position:		Northing:	1,287,804.83 usft
From:	Lat/Long	Easting:	3,166,871.56 usft
Position Uncertainty:	0.0 usft	Slot Radius:	1.10000ft
		Latitude:	40.121876
		Longitude:	-104.903286
		Grid Convergence:	0.39 °

Well	LEONARD 4N		
Well Position	+N/-S	-83.8 usft	Northing:
	+E/-W	1.4 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	40.121646
		Longitude:	-104.903281
		Ground Level:	5,003.0 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	22/11/2016	8.32	66.62	52,296

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 (°)
	0.0	0.0	0.0	91.67

Plan Sections											
MD (usft)	Inc (°)	Azi (°)	Vertical Depth	SS (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	-5,019.0	0.0	0.0	0.00	0.00	0.00	0.00	
800.0	0.00	0.00	800.0	-4,219.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,399.8	12.00	257.80	1,395.4	-3,623.6	-13.2	-61.1	2.00	2.00	0.00	257.80	
3,777.9	12.00	257.80	3,721.6	-1,297.4	-117.7	-544.3	0.00	0.00	0.00	0.00	
4,377.7	0.00	0.00	4,317.0	-702.0	-130.9	-605.4	2.00	-2.00	0.00	180.00	
6,947.7	0.00	0.00	6,887.0	1,868.0	-130.9	-605.4	0.00	0.00	0.00	0.00	KOP - LEONARD 4
7,847.7	90.00	89.95	7,460.0	2,441.0	-130.4	-32.4	10.00	10.00	9.99	89.95	HZ LP - LEONARD
12,205.7	90.00	89.94	7,460.0	2,441.0	-126.4	4,325.6	0.00	0.00	0.00	-42.23	BHL - LEONARD 4I

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well LEONARD 4N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB-EST @ 5019.0usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 5019.0usft (Original Well Elev)
Site:	NW SW SEC. 21 T2N R67W 6th P.M.	North Reference:	True
Well:	LEONARD 4N	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: 1880ft FSL & 494ft FWL of Sec 21										
0.0	0.00	0.00	0.0	5,019.00	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	4,919.00	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	4,819.00	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	4,719.00	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	4,619.00	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	4,519.00	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	4,419.00	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	4,319.00	0.0	0.0	0.0	0.00	0.00	0.00
START NUDGE (2°/100ft BUR)										
800.0	0.00	0.00	800.0	4,219.00	0.0	0.0	0.0	0.00	0.00	0.00
900.0	2.00	257.80	900.0	4,119.02	-0.4	-1.7	-1.7	2.00	2.00	0.00
1,000.0	4.00	257.80	999.8	4,019.16	-1.5	-6.8	-6.8	2.00	2.00	0.00
1,100.0	6.00	257.80	1,099.5	3,919.55	-3.3	-15.3	-15.2	2.00	2.00	0.00
1,200.0	8.00	257.80	1,198.7	3,820.30	-5.9	-27.3	-27.1	2.00	2.00	0.00
1,300.0	10.00	257.80	1,297.5	3,721.53	-9.2	-42.5	-42.3	2.00	2.00	0.00
EOB TO 12° INC										
1,399.8	12.00	257.80	1,395.4	3,623.57	-13.2	-61.1	-60.7	2.00	2.00	0.00
1,400.0	12.00	257.80	1,395.6	3,623.38	-13.2	-61.2	-60.8	0.00	0.00	0.00
1,500.0	12.00	257.80	1,493.4	3,525.56	-17.6	-81.5	-81.0	0.00	0.00	0.00
1,600.0	12.00	257.80	1,591.3	3,427.74	-22.0	-101.8	-101.1	0.00	0.00	0.00
1,700.0	12.00	257.80	1,689.1	3,329.93	-26.4	-122.1	-121.3	0.00	0.00	0.00
1,800.0	12.00	257.80	1,786.9	3,232.11	-30.8	-142.4	-141.5	0.00	0.00	0.00
1,900.0	12.00	257.80	1,884.7	3,134.30	-35.2	-162.8	-161.7	0.00	0.00	0.00
2,000.0	12.00	257.80	1,982.5	3,036.48	-39.6	-183.1	-181.8	0.00	0.00	0.00
2,100.0	12.00	257.80	2,080.3	2,938.66	-44.0	-203.4	-202.0	0.00	0.00	0.00
2,200.0	12.00	257.80	2,178.2	2,840.85	-48.4	-223.7	-222.2	0.00	0.00	0.00
2,300.0	12.00	257.80	2,276.0	2,743.03	-52.8	-244.0	-242.4	0.00	0.00	0.00
2,400.0	12.00	257.80	2,373.8	2,645.21	-57.2	-264.3	-262.6	0.00	0.00	0.00
2,500.0	12.00	257.80	2,471.6	2,547.40	-61.5	-284.7	-282.7	0.00	0.00	0.00
2,600.0	12.00	257.80	2,569.4	2,449.58	-65.9	-305.0	-302.9	0.00	0.00	0.00
2,700.0	12.00	257.80	2,667.2	2,351.77	-70.3	-325.3	-323.1	0.00	0.00	0.00
2,800.0	12.00	257.80	2,765.1	2,253.95	-74.7	-345.6	-343.3	0.00	0.00	0.00
2,900.0	12.00	257.80	2,862.9	2,156.13	-79.1	-365.9	-363.4	0.00	0.00	0.00
3,000.0	12.00	257.80	2,960.7	2,058.32	-83.5	-386.2	-383.6	0.00	0.00	0.00
3,100.0	12.00	257.80	3,058.5	1,960.50	-87.9	-406.5	-403.8	0.00	0.00	0.00
3,200.0	12.00	257.80	3,156.3	1,862.69	-92.3	-426.9	-424.0	0.00	0.00	0.00
3,300.0	12.00	257.80	3,254.1	1,764.87	-96.7	-447.2	-444.2	0.00	0.00	0.00
3,400.0	12.00	257.80	3,351.9	1,667.05	-101.1	-467.5	-464.3	0.00	0.00	0.00
3,500.0	12.00	257.80	3,449.8	1,569.24	-105.5	-487.8	-484.5	0.00	0.00	0.00
3,600.0	12.00	257.80	3,547.6	1,471.42	-109.9	-508.1	-504.7	0.00	0.00	0.00
3,700.0	12.00	257.80	3,645.4	1,373.60	-114.3	-528.4	-524.9	0.00	0.00	0.00
END OF TANGENT										
3,777.9	12.00	257.80	3,721.6	1,297.43	-117.7	-544.3	-540.6	0.00	0.00	0.00
3,800.0	11.55	257.80	3,743.2	1,275.77	-118.6	-548.7	-545.0	2.00	-2.00	0.00
3,900.0	9.55	257.80	3,841.5	1,177.47	-122.5	-566.6	-562.7	2.00	-2.00	0.00
PARKMAN										
3,959.2	8.37	257.80	3,900.0	1,119.00	-124.4	-575.6	-571.7	2.00	-2.00	0.00
4,000.0	7.55	257.80	3,940.4	1,078.58	-125.6	-581.1	-577.2	2.00	-2.00	0.00
4,100.0	5.55	257.80	4,039.8	979.24	-128.1	-592.3	-588.3	2.00	-2.00	0.00
4,200.0	3.55	257.80	4,139.4	879.56	-129.7	-600.0	-596.0	2.00	-2.00	0.00
4,300.0	1.55	257.80	4,239.3	779.67	-130.7	-604.4	-600.3	2.00	-2.00	0.00
EOD TO VERTICAL										

Planning Report



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Well:	LEONARD 4N	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)
4,377.7	0.00	0.00	4,317.0	702.00	-130.9	-605.4	-601.3	2.00	-2.00	0.00
4,400.0	0.00	0.00	4,339.3	679.68	-130.9	-605.4	-601.3	0.00	0.00	0.00
4,500.0	0.00	0.00	4,439.3	579.68	-130.9	-605.4	-601.3	0.00	0.00	0.00
4,600.0	0.00	0.00	4,539.3	479.68	-130.9	-605.4	-601.3	0.00	0.00	0.00
4,700.0	0.00	0.00	4,639.3	379.68	-130.9	-605.4	-601.3	0.00	0.00	0.00
SUSSEX										
4,778.7	0.00	0.00	4,718.0	301.00	-130.9	-605.4	-601.3	0.00	0.00	0.00
4,800.0	0.00	0.00	4,739.3	279.68	-130.9	-605.4	-601.3	0.00	0.00	0.00
4,900.0	0.00	0.00	4,839.3	179.68	-130.9	-605.4	-601.3	0.00	0.00	0.00
5,000.0	0.00	0.00	4,939.3	79.68	-130.9	-605.4	-601.3	0.00	0.00	0.00
5,100.0	0.00	0.00	5,039.3	-20.32	-130.9	-605.4	-601.3	0.00	0.00	0.00
SHANNON										
5,160.7	0.00	0.00	5,100.0	-81.00	-130.9	-605.4	-601.3	0.00	0.00	0.00
5,200.0	0.00	0.00	5,139.3	-120.32	-130.9	-605.4	-601.3	0.00	0.00	0.00
5,300.0	0.00	0.00	5,239.3	-220.32	-130.9	-605.4	-601.3	0.00	0.00	0.00
5,400.0	0.00	0.00	5,339.3	-320.32	-130.9	-605.4	-601.3	0.00	0.00	0.00
5,500.0	0.00	0.00	5,439.3	-420.32	-130.9	-605.4	-601.3	0.00	0.00	0.00
5,600.0	0.00	0.00	5,539.3	-520.32	-130.9	-605.4	-601.3	0.00	0.00	0.00
5,700.0	0.00	0.00	5,639.3	-620.32	-130.9	-605.4	-601.3	0.00	0.00	0.00
5,800.0	0.00	0.00	5,739.3	-720.32	-130.9	-605.4	-601.3	0.00	0.00	0.00
5,900.0	0.00	0.00	5,839.3	-820.32	-130.9	-605.4	-601.3	0.00	0.00	0.00
6,000.0	0.00	0.00	5,939.3	-920.32	-130.9	-605.4	-601.3	0.00	0.00	0.00
6,100.0	0.00	0.00	6,039.3	-1,020.32	-130.9	-605.4	-601.3	0.00	0.00	0.00
6,200.0	0.00	0.00	6,139.3	-1,120.32	-130.9	-605.4	-601.3	0.00	0.00	0.00
6,300.0	0.00	0.00	6,239.3	-1,220.32	-130.9	-605.4	-601.3	0.00	0.00	0.00
6,400.0	0.00	0.00	6,339.3	-1,320.32	-130.9	-605.4	-601.3	0.00	0.00	0.00
6,500.0	0.00	0.00	6,439.3	-1,420.32	-130.9	-605.4	-601.3	0.00	0.00	0.00
6,600.0	0.00	0.00	6,539.3	-1,520.32	-130.9	-605.4	-601.3	0.00	0.00	0.00
6,700.0	0.00	0.00	6,639.3	-1,620.32	-130.9	-605.4	-601.3	0.00	0.00	0.00
6,800.0	0.00	0.00	6,739.3	-1,720.32	-130.9	-605.4	-601.3	0.00	0.00	0.00
6,900.0	0.00	0.00	6,839.3	-1,820.32	-130.9	-605.4	-601.3	0.00	0.00	0.00
KOP (10°/100ft BUR)										
6,947.7	0.00	0.00	6,887.0	-1,868.00	-130.9	-605.4	-601.3	0.00	0.00	0.00
7,000.0	5.23	89.95	6,939.3	-1,920.25	-130.9	-603.0	-598.9	10.00	10.00	0.00
7,100.0	15.23	89.95	7,037.5	-2,018.54	-130.9	-585.3	-581.2	10.00	10.00	0.00
7,200.0	25.23	89.95	7,131.2	-2,112.25	-130.8	-550.7	-546.7	10.00	10.00	0.00
7,300.0	35.23	89.95	7,217.5	-2,198.54	-130.8	-500.5	-496.4	10.00	10.00	0.00
7,400.0	45.23	89.95	7,293.8	-2,274.79	-130.8	-435.9	-431.9	10.00	10.00	0.00
7,500.0	55.23	89.95	7,357.7	-2,338.68	-130.7	-359.2	-355.2	10.00	10.00	0.00
NIOBRARA										
7,563.6	61.59	89.95	7,391.0	-2,372.00	-130.6	-305.0	-301.1	10.00	10.00	0.00
7,600.0	65.23	89.95	7,407.3	-2,388.27	-130.6	-272.5	-268.6	10.00	10.00	0.00
7,700.0	75.23	89.95	7,441.1	-2,422.06	-130.5	-178.5	-174.6	10.00	10.00	0.00
7,800.0	85.23	89.95	7,458.0	-2,439.01	-130.4	-80.1	-76.2	10.00	10.00	0.00
HZ LP: 1750ft FSL & 460ft FWL of Sec 21 - NIO B										
7,847.7	90.00	89.95	7,460.0	-2,441.00	-130.4	-32.4	-28.6	10.00	10.00	0.00
7,900.0	90.00	89.95	7,460.0	-2,441.00	-130.4	19.9	23.7	0.00	0.00	0.00
8,000.0	90.00	89.95	7,460.0	-2,441.01	-130.3	119.9	123.6	0.00	0.00	0.00
8,100.0	90.00	89.95	7,460.0	-2,441.02	-130.2	219.9	223.6	0.00	0.00	0.00
8,200.0	90.00	89.95	7,460.0	-2,441.02	-130.1	319.9	323.5	0.00	0.00	0.00
8,300.0	90.00	89.95	7,460.0	-2,441.03	-130.0	419.9	423.5	0.00	0.00	0.00
8,400.0	90.00	89.95	7,460.0	-2,441.03	-129.9	519.9	523.4	0.00	0.00	0.00
8,500.0	90.00	89.95	7,460.0	-2,441.04	-129.8	619.9	623.4	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well LEONARD 4N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB-EST @ 5019.0usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 5019.0usft (Original Well Elev)
Site:	NW SW SEC. 21 T2N R67W 6th P.M.	North Reference:	True
Well:	LEONARD 4N	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)
8,600.0	90.00	89.95	7,460.0	-2,441.04	-129.8	719.9	723.3	0.00	0.00	0.00
8,700.0	90.00	89.95	7,460.0	-2,441.05	-129.7	819.9	823.3	0.00	0.00	0.00
8,800.0	90.00	89.95	7,460.1	-2,441.05	-129.6	919.9	923.2	0.00	0.00	0.00
8,900.0	90.00	89.95	7,460.1	-2,441.06	-129.5	1,019.9	1,023.2	0.00	0.00	0.00
9,000.0	90.00	89.95	7,460.1	-2,441.06	-129.4	1,119.9	1,123.2	0.00	0.00	0.00
9,100.0	90.00	89.95	7,460.1	-2,441.06	-129.3	1,219.9	1,223.1	0.00	0.00	0.00
9,200.0	90.00	89.95	7,460.1	-2,441.07	-129.2	1,319.9	1,323.1	0.00	0.00	0.00
9,300.0	90.00	89.95	7,460.1	-2,441.07	-129.1	1,419.9	1,423.0	0.00	0.00	0.00
9,400.0	90.00	89.95	7,460.1	-2,441.07	-129.0	1,519.9	1,523.0	0.00	0.00	0.00
9,500.0	90.00	89.95	7,460.1	-2,441.07	-128.9	1,619.9	1,622.9	0.00	0.00	0.00
9,600.0	90.00	89.95	7,460.1	-2,441.08	-128.9	1,719.9	1,722.9	0.00	0.00	0.00
9,700.0	90.00	89.95	7,460.1	-2,441.08	-128.8	1,819.9	1,822.8	0.00	0.00	0.00
9,800.0	90.00	89.95	7,460.1	-2,441.08	-128.7	1,919.9	1,922.8	0.00	0.00	0.00
9,900.0	90.00	89.95	7,460.1	-2,441.08	-128.6	2,019.9	2,022.7	0.00	0.00	0.00
10,000.0	90.00	89.95	7,460.1	-2,441.08	-128.5	2,119.9	2,122.7	0.00	0.00	0.00
10,100.0	90.00	89.95	7,460.1	-2,441.08	-128.4	2,219.9	2,222.7	0.00	0.00	0.00
10,200.0	90.00	89.95	7,460.1	-2,441.08	-128.3	2,319.9	2,322.6	0.00	0.00	0.00
10,300.0	90.00	89.95	7,460.1	-2,441.08	-128.2	2,419.9	2,422.6	0.00	0.00	0.00
10,400.0	90.00	89.95	7,460.1	-2,441.08	-128.1	2,519.9	2,522.5	0.00	0.00	0.00
10,500.0	90.00	89.95	7,460.1	-2,441.07	-128.0	2,619.9	2,622.5	0.00	0.00	0.00
10,600.0	90.00	89.95	7,460.1	-2,441.07	-127.9	2,719.9	2,722.4	0.00	0.00	0.00
10,700.0	90.00	89.95	7,460.1	-2,441.07	-127.8	2,819.9	2,822.4	0.00	0.00	0.00
10,800.0	90.00	89.95	7,460.1	-2,441.07	-127.7	2,919.9	2,922.3	0.00	0.00	0.00
10,900.0	90.00	89.95	7,460.1	-2,441.07	-127.6	3,019.9	3,022.3	0.00	0.00	0.00
11,000.0	90.00	89.95	7,460.1	-2,441.06	-127.6	3,119.9	3,122.2	0.00	0.00	0.00
11,100.0	90.00	89.95	7,460.1	-2,441.06	-127.5	3,219.9	3,222.2	0.00	0.00	0.00
11,200.0	90.00	89.95	7,460.1	-2,441.06	-127.4	3,319.9	3,322.2	0.00	0.00	0.00
11,300.0	90.00	89.94	7,460.1	-2,441.05	-127.3	3,419.9	3,422.1	0.00	0.00	0.00
11,400.0	90.00	89.94	7,460.0	-2,441.05	-127.2	3,519.9	3,522.1	0.00	0.00	0.00
11,500.0	90.00	89.94	7,460.0	-2,441.04	-127.1	3,619.9	3,622.0	0.00	0.00	0.00
11,600.0	90.00	89.94	7,460.0	-2,441.04	-127.0	3,719.9	3,722.0	0.00	0.00	0.00
11,700.0	90.00	89.94	7,460.0	-2,441.03	-126.9	3,819.9	3,821.9	0.00	0.00	0.00
11,800.0	90.00	89.94	7,460.0	-2,441.03	-126.8	3,919.9	3,921.9	0.00	0.00	0.00
11,900.0	90.00	89.94	7,460.0	-2,441.02	-126.7	4,019.9	4,021.8	0.00	0.00	0.00
12,000.0	90.00	89.94	7,460.0	-2,441.01	-126.6	4,119.9	4,121.8	0.00	0.00	0.00
12,100.0	90.00	89.94	7,460.0	-2,441.01	-126.5	4,219.9	4,221.7	0.00	0.00	0.00
12,200.0	90.00	89.94	7,460.0	-2,441.00	-126.4	4,319.9	4,321.7	0.00	0.00	0.00
BHL: 1750ft FSL & 460ft FEL of Sec 21										
12,205.7	90.00	89.94	7,460.0	-2,441.00	-126.4	4,325.6	4,327.5	0.00	0.00	0.00

Formations

MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,959.2	3,900.0	PARKMAN			
4,778.7	4,718.0	SUSSEX			
5,160.7	5,100.0	SHANNON			
7,563.6	7,391.0	NIOBRARA			
7,847.7	7,460.0	NIO B			

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well LEONARD 4N
Company:	EXTRACTION OIL & GAS	TVD Reference:	KB-EST @ 5019.0usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 5019.0usft (Original Well Elev)
Site:	NW SW SEC. 21 T2N R67W 6th P.M.	North Reference:	True
Well:	LEONARD 4N	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Plan Annotations

MD (usft)	TVD (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
0.0	0.0	0.0	0.0	SHL: 1880ft FSL & 494ft FWL of Sec 21
800.0	800.0	0.0	0.0	START NUDGE (2°/100ft BUR)
1,399.8	1,395.4	-13.2	-61.1	EOB TO 12° INC
3,777.9	3,721.6	-117.7	-544.3	END OF TANGENT
4,377.7	4,317.0	-130.9	-605.4	EOD TO VERTICAL
6,947.7	6,887.0	-130.9	-605.4	KOP (10°/100ft BUR)
7,847.7	7,460.0	-130.4	-32.4	HZ LP: 1750ft FSL & 460ft FWL of Sec 21
12,205.7	7,460.0	-126.4	4,325.6	BHL: 1750ft FSL & 460ft FEL of Sec 21