

BISON OIL & GAS II, LLC

WELD COUNTY, COLORADO (NAD 83)

SW NW SEC. 22 T8N R60W 6th P.M.

HALE FED 8-60 22-23-11

ORIGINAL WELLBORE

12 July, 2017

Plan: PROPOSAL #1



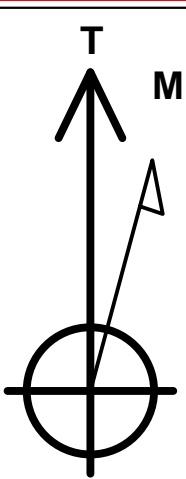
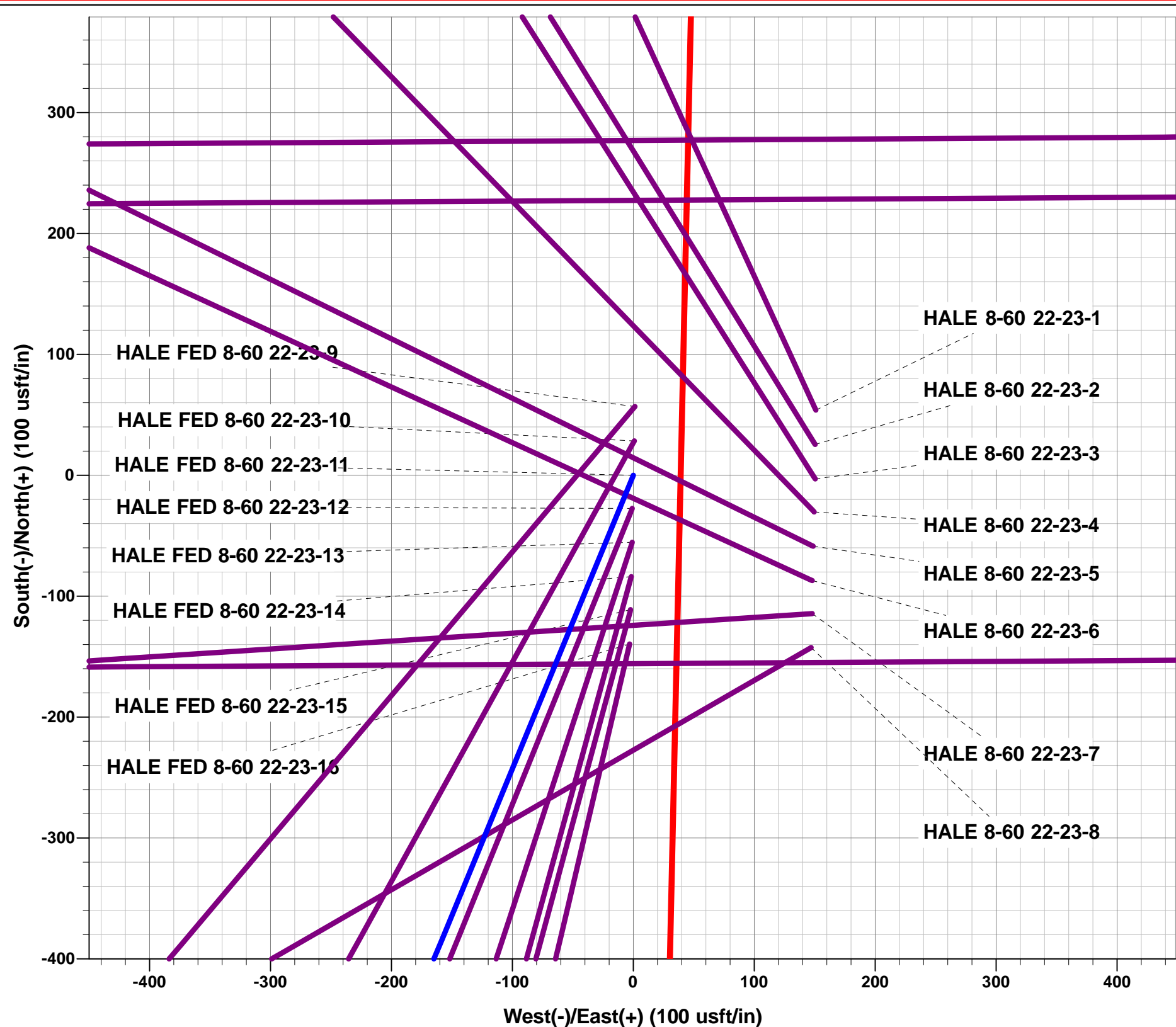
Project: WELD COUNTY, COLORADO (NAD 83)
Site: SW NW SEC. 22 T8N R60W 6th P.M.
Well: HALE FED 8-60 22-23-11
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #1

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSection	Dep	Annotation
0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	SHL: 2076ft FNL & 560ft FWL of Sec 22
600.0	600.0	0.00	0.00	0.0	0.0	0.0	0.0	START BUILD (2°/100ft BUR)
1591.4	1612.4	20.25	202.39	-163.7	-67.4	-36.4	177.0	EOB TO 20.25° INC
4610.9	4830.7	20.25	202.39	-1193.5	-491.6	-265.2	1290.8	END OF TANGENT
5602.3	5843.0	0.00	0.00	-1357.2	-559.0	-301.6	1467.8	EOD TO VERTICAL
5632.3	5873.0	0.00	0.00	-1357.2	-559.0	-301.6	1467.8	KOP (10°/100ft BUR)
6205.2	6772.9	90.00	89.66	-1353.8	13.9	261.0	2040.7	BPI: 1868ft FSL & 600ft FWL of Sec 22
6205.2	13494.0	90.00	89.65	-1313.6	6734.8	6861.4	8761.7	EPI: 1874ft FSL & 2020ft FWL of Sec 23
6205.2	13813.9	90.00	89.53	-1311.3	7054.8	7175.6	9081.7	BHL: 1874ft FSL & 2340ft FWL of Sec 23

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - HALE FED 8-60 22-23-11	5632.3	-1357.2	-559.0	40.645683	-104.087000
BPI - HALE FED 8-60 22-23-11	6205.2	-1353.8	13.9	40.645692	-104.084936
EPI - HALE FED 8-60 22-23-11	6205.2	-1313.6	6734.8	40.645800	-104.060717
BHL - HALE FED 8-60 22-23-11	6205.2	-1311.3	7054.8	40.645806	-104.059564



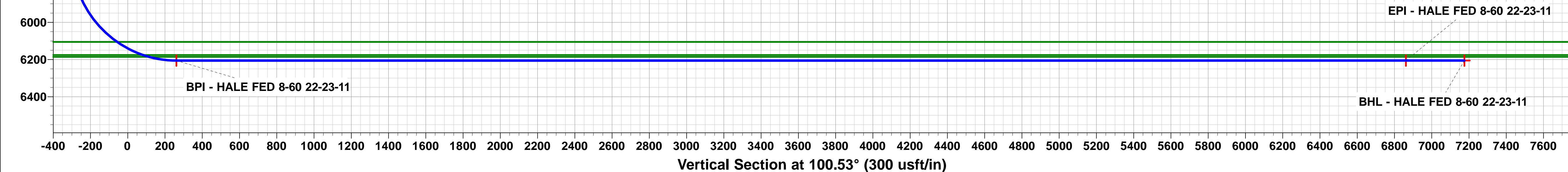
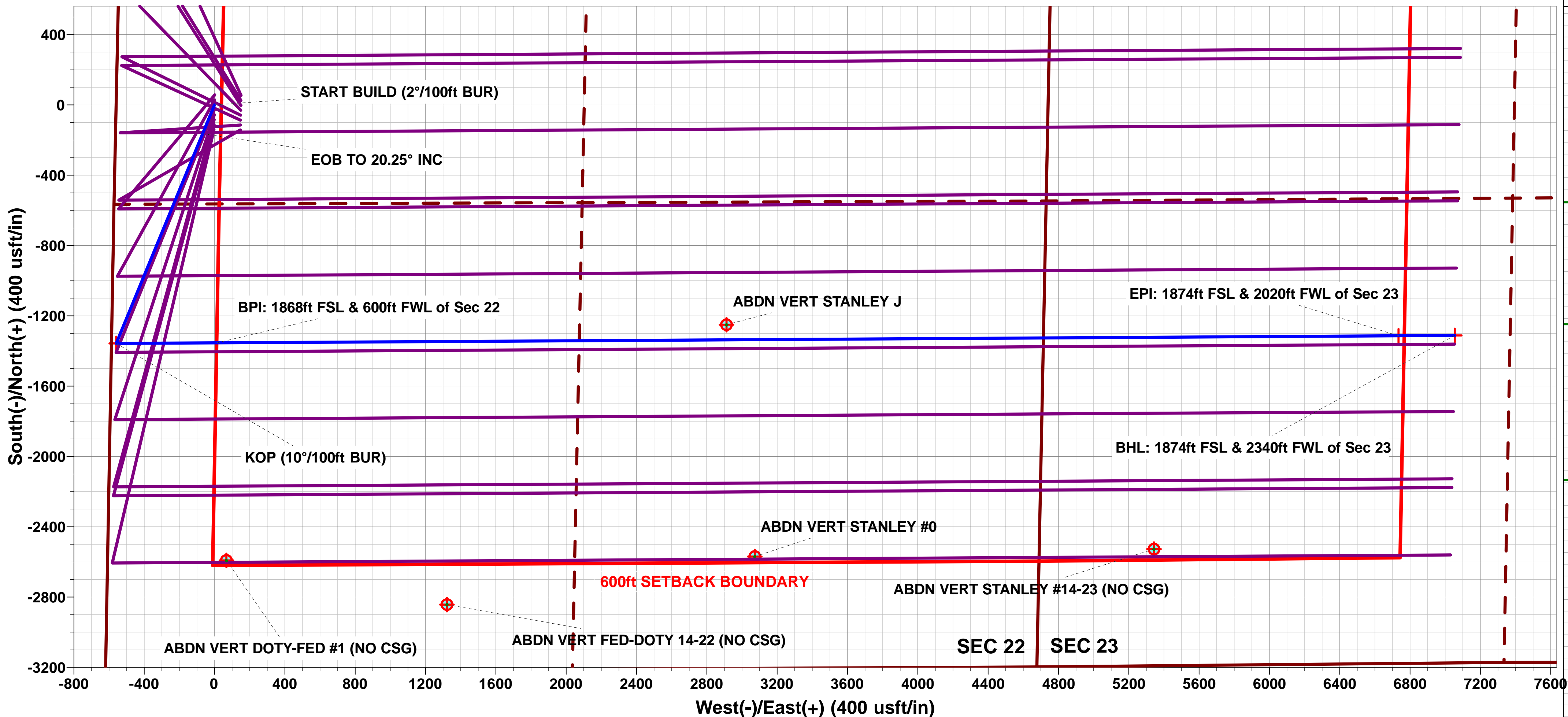
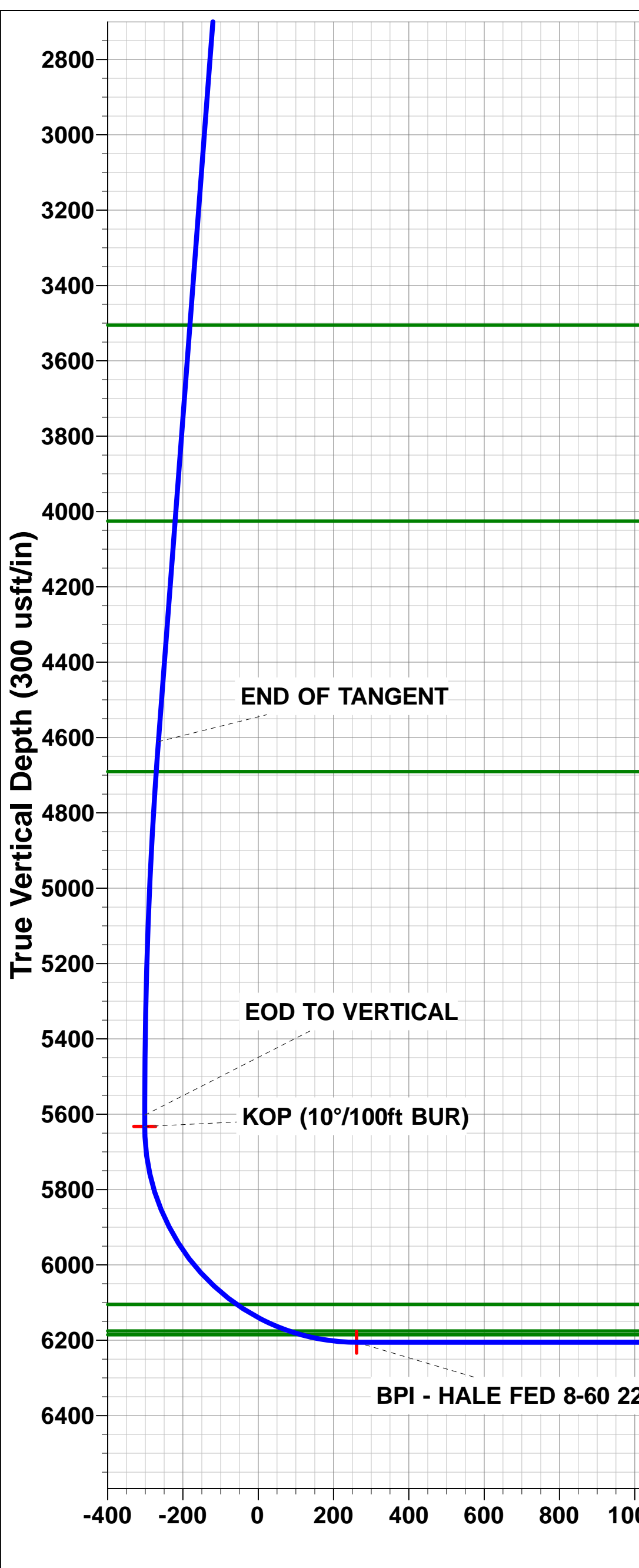
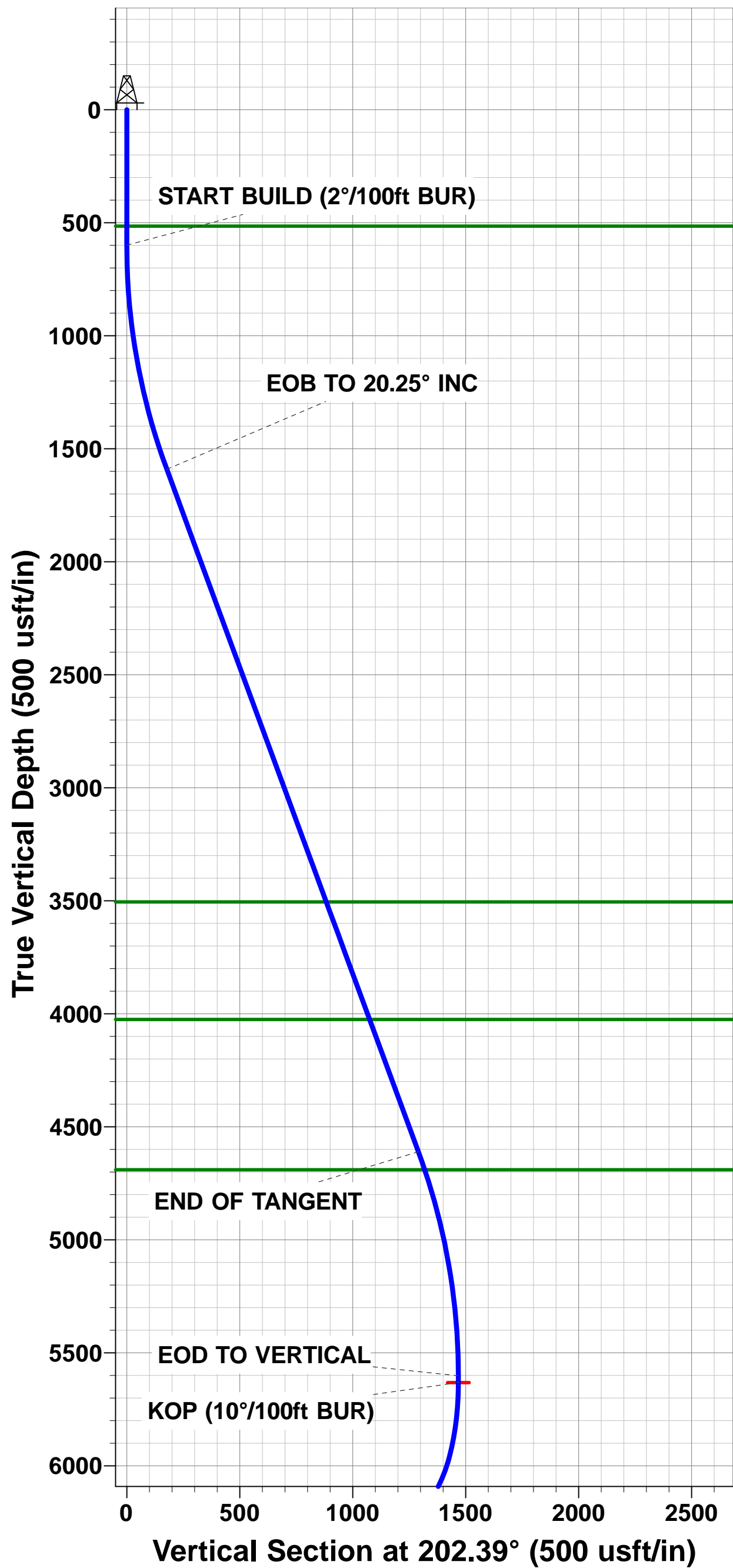
Azimuths to True North
Magnetic North: 7.86°
Magnetic Field
Strength: 52582.3snT
Dip Angle: 67.15°
Date: 11/07/2017
Model: IGRF2015

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
515.2	515.2	PIERRE SH (BASE FOX HILLS)
3505.2	3652.2	PARKMAN
4025.2	4206.4	SUSSEX
4690.2	4914.8	SHANNON
6105.2	6429.3	SHARON SPRINGS SHALE
6175.2	6586.7	NIORARA FORMATION
6185.2	6621.1	NIORARA A CHALK

PROPOSED LOCAL COORDINATES:

SHL: 2076ft FNL & 560ft FWL of Sec 22
BEGIN PROD INT: 1868ft FSL & 600ft FWL of Sec 22
END PROD INTERVAL: 1874ft FSL & 2020ft FWL of Sec 23
BHL: 1874ft FSL & 2340ft FWL of Sec 23



Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well HALE FED 8-60 22-23-11
Company:	BISON OIL & GAS II, LLC	TVD Reference:	KB-EST @ 4955.2usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4955.2usft (Original Well Elev)
Site:	SW NW SEC. 22 T8N R60W 6th P.M.	North Reference:	True
Well:	HALE FED 8-60 22-23-11	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	SW NW SEC. 22 T8N R60W 6th P.M.		
Site Position:		Northing:	1,482,610.76usft
From:	Lat/Long	Easting:	3,392,779.56usft
Position Uncertainty:	0.0 usft	Slot Radius:	1.10000ft
		Latitude:	40.649556
		Longitude:	-104.084442
		Grid Convergence:	0.91 °

Well	HALE FED 8-60 22-23-11		
Well Position	+N-S	-53.9 usft	Northing:
	+E-W	-151.0 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	11/07/2017	7.86	67.15	52,582

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	100.53

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	-4,955.2	0.0	0.0	0.00	0.00	0.00	0.00	
600.0	0.00	0.00	600.0	-4,355.2	0.0	0.0	0.00	0.00	0.00	0.00	
1,612.4	20.25	202.39	1,591.4	-3,363.8	-163.7	-67.4	2.00	2.00	0.00	202.39	
4,830.7	20.25	202.39	4,610.9	-344.3	-1,193.5	-491.6	0.00	0.00	0.00	0.00	
5,843.0	0.00	0.00	5,602.3	647.1	-1,357.2	-559.0	2.00	-2.00	0.00	180.00	
5,873.0	0.00	0.00	5,632.3	677.1	-1,357.2	-559.0	0.00	0.00	0.00	0.00	KOP - HALE FED 8
6,772.9	90.00	89.66	6,205.2	1,250.0	-1,353.8	13.9	10.00	10.00	9.96	89.66	BPI - HALE FED 8-
13,494.0	90.00	89.65	6,205.2	1,250.0	-1,313.6	6,734.8	0.00	0.00	0.00	-76.87	EPI - HALE FED 8-
13,813.9	90.00	89.53	6,205.2	1,250.0	-1,311.3	7,054.8	0.04	0.00	-0.04	-91.46	BHL - HALE FED 8

Planning Report



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Site:	SW NW SEC. 22 T8N R60W 6th P.M.	North Reference:	True
Well:	HALE FED 8-60 22-23-11	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: 2076ft FNL & 560ft FWL of Sec 22										
0.0	0.00	0.00	0.0	4,955.20	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	4,855.20	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	4,755.20	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	4,655.20	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	4,555.20	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	4,455.20	0.0	0.0	0.0	0.00	0.00	0.00
PIERRE SHALE (BASE FOX HILLS)										
515.2	0.00	0.00	515.2	4,440.00	0.0	0.0	0.0	0.00	0.00	0.00
START BUILD (2°/100ft BUR)										
600.0	0.00	0.00	600.0	4,355.20	0.0	0.0	0.0	0.00	0.00	0.00
700.0	2.00	202.39	700.0	4,255.22	-1.6	-0.7	-0.4	2.00	2.00	0.00
800.0	4.00	202.39	799.8	4,155.36	-6.5	-2.7	-1.4	2.00	2.00	0.00
900.0	6.00	202.39	899.5	4,055.75	-14.5	-6.0	-3.2	2.00	2.00	0.00
1,000.0	8.00	202.39	998.7	3,956.50	-25.8	-10.6	-5.7	2.00	2.00	0.00
1,100.0	10.00	202.39	1,097.5	3,857.73	-40.2	-16.6	-8.9	2.00	2.00	0.00
1,200.0	12.00	202.39	1,195.6	3,759.58	-57.9	-23.8	-12.9	2.00	2.00	0.00
1,300.0	14.00	202.39	1,293.1	3,662.14	-78.7	-32.4	-17.5	2.00	2.00	0.00
1,400.0	16.00	202.39	1,389.6	3,565.56	-102.6	-42.3	-22.8	2.00	2.00	0.00
1,500.0	18.00	202.39	1,485.3	3,469.93	-129.6	-53.4	-28.8	2.00	2.00	0.00
1,600.0	20.00	202.39	1,579.8	3,375.38	-159.7	-65.8	-35.5	2.00	2.00	0.00
EOB TO 20.25° INC										
1,612.4	20.25	202.39	1,591.4	3,363.78	-163.7	-67.4	-36.4	2.00	2.00	0.00
1,700.0	20.25	202.39	1,673.6	3,281.55	-191.7	-79.0	-42.6	0.00	0.00	0.00
1,800.0	20.25	202.39	1,767.5	3,187.73	-223.7	-92.1	-49.7	0.00	0.00	0.00
1,900.0	20.25	202.39	1,861.3	3,093.91	-255.7	-105.3	-56.8	0.00	0.00	0.00
2,000.0	20.25	202.39	1,955.1	3,000.09	-287.7	-118.5	-63.9	0.00	0.00	0.00
2,100.0	20.25	202.39	2,048.9	2,906.27	-319.7	-131.7	-71.0	0.00	0.00	0.00
2,200.0	20.25	202.39	2,142.7	2,812.45	-351.7	-144.9	-78.2	0.00	0.00	0.00
2,300.0	20.25	202.39	2,236.6	2,718.63	-383.7	-158.0	-85.3	0.00	0.00	0.00
2,400.0	20.25	202.39	2,330.4	2,624.81	-415.7	-171.2	-92.4	0.00	0.00	0.00
2,500.0	20.25	202.39	2,424.2	2,530.99	-447.7	-184.4	-99.5	0.00	0.00	0.00
2,600.0	20.25	202.39	2,518.0	2,437.17	-479.7	-197.6	-106.6	0.00	0.00	0.00
2,700.0	20.25	202.39	2,611.9	2,343.35	-511.7	-210.8	-113.7	0.00	0.00	0.00
2,800.0	20.25	202.39	2,705.7	2,249.53	-543.7	-223.9	-120.8	0.00	0.00	0.00
2,900.0	20.25	202.39	2,799.5	2,155.70	-575.7	-237.1	-127.9	0.00	0.00	0.00
3,000.0	20.25	202.39	2,893.3	2,061.88	-607.7	-250.3	-135.0	0.00	0.00	0.00
3,100.0	20.25	202.39	2,987.1	1,968.06	-639.7	-263.5	-142.1	0.00	0.00	0.00
3,200.0	20.25	202.39	3,081.0	1,874.24	-671.7	-276.7	-149.3	0.00	0.00	0.00
3,300.0	20.25	202.39	3,174.8	1,780.42	-703.7	-289.8	-156.4	0.00	0.00	0.00
3,400.0	20.25	202.39	3,268.6	1,686.60	-735.7	-303.0	-163.5	0.00	0.00	0.00
3,500.0	20.25	202.39	3,362.4	1,592.78	-767.7	-316.2	-170.6	0.00	0.00	0.00
3,600.0	20.25	202.39	3,456.2	1,498.96	-799.7	-329.4	-177.7	0.00	0.00	0.00
PARKMAN										
3,652.2	20.25	202.39	3,505.2	1,450.00	-816.4	-336.3	-181.4	0.00	0.00	0.00
3,700.0	20.25	202.39	3,550.1	1,405.14	-831.7	-342.6	-184.8	0.00	0.00	0.00
3,800.0	20.25	202.39	3,643.9	1,311.32	-863.7	-355.7	-191.9	0.00	0.00	0.00
3,900.0	20.25	202.39	3,737.7	1,217.50	-895.7	-368.9	-199.0	0.00	0.00	0.00
4,000.0	20.25	202.39	3,831.5	1,123.68	-927.7	-382.1	-206.1	0.00	0.00	0.00
4,100.0	20.25	202.39	3,925.3	1,029.85	-959.7	-395.3	-213.2	0.00	0.00	0.00
4,200.0	20.25	202.39	4,019.2	936.03	-991.7	-408.5	-220.4	0.00	0.00	0.00
SUSSEX										
4,206.4	20.25	202.39	4,025.2	930.00	-993.8	-409.3	-220.8	0.00	0.00	0.00

Planning Report



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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)
4,300.0	20.25	202.39	4,113.0	842.21	-1,023.7	-421.6	-227.5	0.00	0.00	0.00
4,400.0	20.25	202.39	4,206.8	748.39	-1,055.7	-434.8	-234.6	0.00	0.00	0.00
4,500.0	20.25	202.39	4,300.6	654.57	-1,087.7	-448.0	-241.7	0.00	0.00	0.00
4,600.0	20.25	202.39	4,394.4	560.75	-1,119.7	-461.2	-248.8	0.00	0.00	0.00
4,700.0	20.25	202.39	4,488.3	466.93	-1,151.7	-474.4	-255.9	0.00	0.00	0.00
4,800.0	20.25	202.39	4,582.1	373.11	-1,183.7	-487.5	-263.0	0.00	0.00	0.00
END OF TANGENT										
4,830.7	20.25	202.39	4,610.9	344.32	-1,193.5	-491.6	-265.2	0.00	0.00	0.00
4,900.0	18.86	202.39	4,676.2	279.00	-1,215.0	-500.4	-270.0	2.00	-2.00	0.00
SHANNON										
4,914.8	18.57	202.39	4,690.2	265.00	-1,219.4	-502.2	-270.9	2.00	-2.00	0.00
5,000.0	16.86	202.39	4,771.4	183.83	-1,243.3	-512.1	-276.3	2.00	-2.00	0.00
5,100.0	14.86	202.39	4,867.6	87.64	-1,268.6	-522.5	-281.9	2.00	-2.00	0.00
5,200.0	12.86	202.39	4,964.6	-9.44	-1,290.7	-531.6	-286.8	2.00	-2.00	0.00
5,300.0	10.86	202.39	5,062.5	-107.30	-1,309.7	-539.5	-291.0	2.00	-2.00	0.00
5,400.0	8.86	202.39	5,161.0	-205.82	-1,325.6	-546.0	-294.5	2.00	-2.00	0.00
5,500.0	6.86	202.39	5,260.1	-304.88	-1,338.2	-551.2	-297.4	2.00	-2.00	0.00
5,600.0	4.86	202.39	5,359.5	-404.35	-1,347.7	-555.1	-299.5	2.00	-2.00	0.00
5,700.0	2.86	202.39	5,459.3	-504.12	-1,353.9	-557.6	-300.8	2.00	-2.00	0.00
5,800.0	0.86	202.39	5,559.3	-604.06	-1,356.9	-558.9	-301.5	2.00	-2.00	0.00
EOD TO VERTICAL										
5,843.0	0.00	0.00	5,602.3	-647.10	-1,357.2	-559.0	-301.6	2.00	-2.00	0.00
KOP (10°/100ft BUR)										
5,873.0	0.00	0.00	5,632.3	-677.10	-1,357.2	-559.0	-301.6	0.00	0.00	0.00
5,900.0	2.70	89.66	5,659.2	-704.05	-1,357.2	-558.4	-300.9	10.00	10.00	0.00
6,000.0	12.70	89.66	5,758.2	-803.02	-1,357.1	-545.0	-287.8	10.00	10.00	0.00
6,100.0	22.70	89.66	5,853.4	-898.17	-1,356.9	-514.6	-258.0	10.00	10.00	0.00
6,200.0	32.70	89.66	5,941.8	-986.59	-1,356.7	-468.2	-212.4	10.00	10.00	0.00
6,300.0	42.70	89.66	6,020.8	-1,065.62	-1,356.3	-407.1	-152.4	10.00	10.00	0.00
6,400.0	52.70	89.66	6,088.0	-1,132.83	-1,355.9	-333.3	-79.9	10.00	10.00	0.00
SHARON SPRINGS SHALE										
6,429.3	55.63	89.66	6,105.2	-1,150.00	-1,355.7	-309.5	-56.5	10.00	10.00	0.00
6,500.0	62.70	89.66	6,141.4	-1,186.20	-1,355.4	-248.8	3.0	10.00	10.00	0.00
NIORARA FORMATION										
6,586.7	71.38	89.66	6,175.2	-1,220.00	-1,354.9	-169.1	81.4	10.00	10.00	0.00
6,600.0	72.70	89.66	6,179.3	-1,224.09	-1,354.8	-156.4	93.8	10.00	10.00	0.00
NIORARA A CHALK										
6,621.1	74.82	89.66	6,185.2	-1,230.00	-1,354.7	-136.2	113.7	10.00	10.00	0.00
6,700.0	82.70	89.66	6,200.6	-1,245.36	-1,354.3	-58.9	189.6	10.00	10.00	0.00
BPI: 1868ft FSL & 600ft FWL of Sec 22										
6,772.9	90.00	89.66	6,205.2	-1,250.00	-1,353.8	13.9	261.0	10.00	10.00	0.00
6,800.0	90.00	89.66	6,205.2	-1,250.00	-1,353.7	40.9	287.6	0.00	0.00	0.00
6,900.0	90.00	89.66	6,205.2	-1,250.00	-1,353.1	140.9	385.8	0.00	0.00	0.00
7,000.0	90.00	89.66	6,205.2	-1,250.01	-1,352.5	240.9	484.0	0.00	0.00	0.00
7,100.0	90.00	89.66	6,205.2	-1,250.01	-1,351.9	340.9	582.2	0.00	0.00	0.00
7,200.0	90.00	89.66	6,205.2	-1,250.01	-1,351.3	440.9	680.4	0.00	0.00	0.00
7,300.0	90.00	89.66	6,205.2	-1,250.01	-1,350.7	540.9	778.7	0.00	0.00	0.00
7,400.0	90.00	89.66	6,205.2	-1,250.01	-1,350.1	640.9	876.9	0.00	0.00	0.00
7,500.0	90.00	89.66	6,205.2	-1,250.02	-1,349.5	740.9	975.1	0.00	0.00	0.00
7,600.0	90.00	89.66	6,205.2	-1,250.02	-1,349.0	840.9	1,073.3	0.00	0.00	0.00
7,700.0	90.00	89.66	6,205.2	-1,250.02	-1,348.4	940.9	1,171.5	0.00	0.00	0.00
7,800.0	90.00	89.66	6,205.2	-1,250.02	-1,347.8	1,040.9	1,269.7	0.00	0.00	0.00
7,900.0	90.00	89.66	6,205.2	-1,250.02	-1,347.2	1,140.9	1,367.9	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well HALE FED 8-60 22-23-11
Company:	BISON OIL & GAS II, LLC	TVD Reference:	KB-EST @ 4955.2usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4955.2usft (Original Well Elev)
Site:	SW NW SEC. 22 T8N R60W 6th P.M.	North Reference:	True
Well:	HALE FED 8-60 22-23-11	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)
8,000.0	90.00	89.66	6,205.2	-1,250.03	-1,346.6	1,240.9	1,466.1	0.00	0.00	0.00
8,100.0	90.00	89.66	6,205.2	-1,250.03	-1,346.0	1,340.9	1,564.3	0.00	0.00	0.00
8,200.0	90.00	89.66	6,205.2	-1,250.03	-1,345.4	1,440.9	1,662.5	0.00	0.00	0.00
8,300.0	90.00	89.66	6,205.2	-1,250.03	-1,344.8	1,540.9	1,760.7	0.00	0.00	0.00
8,400.0	90.00	89.66	6,205.2	-1,250.03	-1,344.2	1,640.9	1,858.9	0.00	0.00	0.00
8,500.0	90.00	89.66	6,205.2	-1,250.03	-1,343.6	1,740.9	1,957.1	0.00	0.00	0.00
8,600.0	90.00	89.66	6,205.2	-1,250.03	-1,343.0	1,840.9	2,055.3	0.00	0.00	0.00
8,700.0	90.00	89.66	6,205.2	-1,250.04	-1,342.4	1,940.9	2,153.5	0.00	0.00	0.00
8,800.0	90.00	89.66	6,205.2	-1,250.04	-1,341.8	2,040.9	2,251.7	0.00	0.00	0.00
8,900.0	90.00	89.66	6,205.2	-1,250.04	-1,341.2	2,140.9	2,350.0	0.00	0.00	0.00
9,000.0	90.00	89.66	6,205.2	-1,250.04	-1,340.6	2,240.9	2,448.2	0.00	0.00	0.00
9,100.0	90.00	89.66	6,205.2	-1,250.04	-1,340.1	2,340.9	2,546.4	0.00	0.00	0.00
9,200.0	90.00	89.66	6,205.2	-1,250.04	-1,339.5	2,440.9	2,644.6	0.00	0.00	0.00
9,300.0	90.00	89.66	6,205.2	-1,250.04	-1,338.9	2,540.9	2,742.8	0.00	0.00	0.00
9,400.0	90.00	89.66	6,205.2	-1,250.04	-1,338.3	2,640.9	2,841.0	0.00	0.00	0.00
9,500.0	90.00	89.66	6,205.2	-1,250.04	-1,337.7	2,740.9	2,939.2	0.00	0.00	0.00
9,600.0	90.00	89.66	6,205.2	-1,250.04	-1,337.1	2,840.9	3,037.4	0.00	0.00	0.00
9,700.0	90.00	89.66	6,205.2	-1,250.04	-1,336.5	2,940.9	3,135.6	0.00	0.00	0.00
9,800.0	90.00	89.66	6,205.2	-1,250.04	-1,335.9	3,040.9	3,233.8	0.00	0.00	0.00
9,900.0	90.00	89.66	6,205.2	-1,250.04	-1,335.3	3,140.9	3,332.0	0.00	0.00	0.00
10,000.0	90.00	89.66	6,205.2	-1,250.04	-1,334.7	3,240.9	3,430.2	0.00	0.00	0.00
10,100.0	90.00	89.66	6,205.2	-1,250.04	-1,334.1	3,340.9	3,528.4	0.00	0.00	0.00
10,200.0	90.00	89.66	6,205.2	-1,250.04	-1,333.5	3,440.9	3,626.6	0.00	0.00	0.00
10,300.0	90.00	89.66	6,205.2	-1,250.04	-1,332.9	3,540.9	3,724.8	0.00	0.00	0.00
10,400.0	90.00	89.66	6,205.2	-1,250.04	-1,332.3	3,640.9	3,823.0	0.00	0.00	0.00
10,500.0	90.00	89.66	6,205.2	-1,250.04	-1,331.7	3,740.9	3,921.2	0.00	0.00	0.00
10,600.0	90.00	89.66	6,205.2	-1,250.04	-1,331.1	3,840.9	4,019.4	0.00	0.00	0.00
10,700.0	90.00	89.66	6,205.2	-1,250.04	-1,330.5	3,940.9	4,117.6	0.00	0.00	0.00
10,800.0	90.00	89.66	6,205.2	-1,250.04	-1,329.9	4,040.9	4,215.8	0.00	0.00	0.00
10,900.0	90.00	89.66	6,205.2	-1,250.04	-1,329.3	4,140.9	4,314.1	0.00	0.00	0.00
11,000.0	90.00	89.66	6,205.2	-1,250.04	-1,328.7	4,240.9	4,412.3	0.00	0.00	0.00
11,100.0	90.00	89.65	6,205.2	-1,250.04	-1,328.1	4,340.9	4,510.5	0.00	0.00	0.00
11,200.0	90.00	89.65	6,205.2	-1,250.04	-1,327.5	4,440.9	4,608.7	0.00	0.00	0.00
11,300.0	90.00	89.65	6,205.2	-1,250.04	-1,326.9	4,540.9	4,706.9	0.00	0.00	0.00
11,400.0	90.00	89.65	6,205.2	-1,250.04	-1,326.3	4,640.9	4,805.1	0.00	0.00	0.00
11,500.0	90.00	89.65	6,205.2	-1,250.04	-1,325.7	4,740.9	4,903.3	0.00	0.00	0.00
11,600.0	90.00	89.65	6,205.2	-1,250.04	-1,325.1	4,840.9	5,001.5	0.00	0.00	0.00
11,700.0	90.00	89.65	6,205.2	-1,250.03	-1,324.5	4,940.8	5,099.7	0.00	0.00	0.00
11,800.0	90.00	89.65	6,205.2	-1,250.03	-1,323.8	5,040.8	5,197.9	0.00	0.00	0.00
11,900.0	90.00	89.65	6,205.2	-1,250.03	-1,323.2	5,140.8	5,296.1	0.00	0.00	0.00
12,000.0	90.00	89.65	6,205.2	-1,250.03	-1,322.6	5,240.8	5,394.3	0.00	0.00	0.00
12,100.0	90.00	89.65	6,205.2	-1,250.03	-1,322.0	5,340.8	5,492.5	0.00	0.00	0.00
12,200.0	90.00	89.65	6,205.2	-1,250.03	-1,321.4	5,440.8	5,590.7	0.00	0.00	0.00
12,300.0	90.00	89.65	6,205.2	-1,250.03	-1,320.8	5,540.8	5,688.9	0.00	0.00	0.00
12,400.0	90.00	89.65	6,205.2	-1,250.02	-1,320.2	5,640.8	5,787.1	0.00	0.00	0.00
12,500.0	90.00	89.65	6,205.2	-1,250.02	-1,319.6	5,740.8	5,885.3	0.00	0.00	0.00
12,600.0	90.00	89.65	6,205.2	-1,250.02	-1,319.0	5,840.8	5,983.5	0.00	0.00	0.00
12,700.0	90.00	89.65	6,205.2	-1,250.02	-1,318.4	5,940.8	6,081.7	0.00	0.00	0.00
12,800.0	90.00	89.65	6,205.2	-1,250.02	-1,317.8	6,040.8	6,179.9	0.00	0.00	0.00
12,900.0	90.00	89.65	6,205.2	-1,250.01	-1,317.2	6,140.8	6,278.1	0.00	0.00	0.00
13,000.0	90.00	89.65	6,205.2	-1,250.01	-1,316.6	6,240.8	6,376.3	0.00	0.00	0.00
13,100.0	90.00	89.65	6,205.2	-1,250.01	-1,316.0	6,340.8	6,474.5	0.00	0.00	0.00
13,200.0	90.00	89.65	6,205.2	-1,250.01	-1,315.4	6,440.8	6,572.7	0.00	0.00	0.00
13,300.0	90.00	89.65	6,205.2	-1,250.00	-1,314.7	6,540.8	6,670.9	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well HALE FED 8-60 22-23-11
Company:	BISON OIL & GAS II, LLC	TVD Reference:	KB-EST @ 4955.2usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4955.2usft (Original Well Elev)
Site:	SW NW SEC. 22 T8N R60W 6th P.M.	North Reference:	True
Well:	HALE FED 8-60 22-23-11	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)
13,400.0	90.00	89.65	6,205.2	-1,250.00	-1,314.1	6,640.8	6,769.1	0.00	0.00	0.00
EPI: 1874ft FSL & 2020ft FWL of Sec 23										
13,494.0	90.00	89.65	6,205.2	-1,250.00	-1,313.6	6,734.8	6,861.4	0.00	0.00	0.00
13,500.0	90.00	89.65	6,205.2	-1,250.00	-1,313.5	6,740.8	6,867.3	0.04	0.00	-0.04
13,600.0	90.00	89.61	6,205.2	-1,250.00	-1,312.9	6,840.8	6,965.5	0.04	0.00	-0.04
13,700.0	90.00	89.58	6,205.2	-1,250.00	-1,312.2	6,940.8	7,063.7	0.04	0.00	-0.04
13,800.0	90.00	89.54	6,205.2	-1,250.00	-1,311.4	7,040.8	7,161.9	0.04	0.00	-0.04
BHL: 1874ft FSL & 2340ft FWL of Sec 23										
13,813.9	90.00	89.53	6,205.2	-1,250.00	-1,311.3	7,054.8	7,175.6	0.04	0.00	-0.04

Formations						
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
515.2	515.2	PIERRE SHALE (BASE FOX HILLS				
3,652.2	3,505.2	PARKMAN				
4,206.4	4,025.2	SUSSEX				
4,914.8	4,690.2	SHANNON				
6,429.3	6,105.2	SHARON SPRINGS SHALE				
6,586.7	6,175.2	NIOBRARA FORMATION				
6,621.1	6,185.2	NIOBRARA A CHALK				

Plan Annotations				
MD (usft)	TVD (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
0.0	0.0	0.0	0.0	SHL: 2076ft FNL & 560ft FWL of Sec 22
600.0	600.0	0.0	0.0	START BUILD (2°/100ft BUR)
1,612.4	1,591.4	-163.7	-67.4	EOB TO 20.25° INC
4,830.7	4,610.9	-1,193.5	-491.6	END OF TANGENT
5,843.0	5,602.3	-1,357.2	-559.0	EOD TO VERTICAL
5,873.0	5,632.3	-1,357.2	-559.0	KOP (10°/100ft BUR)
6,772.9	6,205.2	-1,353.8	13.9	BPI: 1868ft FSL & 600ft FWL of Sec 22
13,494.0	6,205.2	-1,313.6	6,734.8	EPI: 1874ft FSL & 2020ft FWL of Sec 23
13,813.9	6,205.2	-1,311.3	7,054.8	BHL: 1874ft FSL & 2340ft FWL of Sec 23