

BISON OIL & GAS II, LLC

WELD COUNTY, COLORADO (NAD 83)

NW SW SEC. 16 T8N R59W 6th P.M.

BIG MOUNTAIN VIPER FED 8-59 16-17-18-1

ORIGINAL WELLBORE

28 April, 2019

Plan: PROPOSAL #1



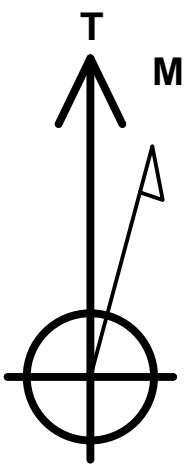
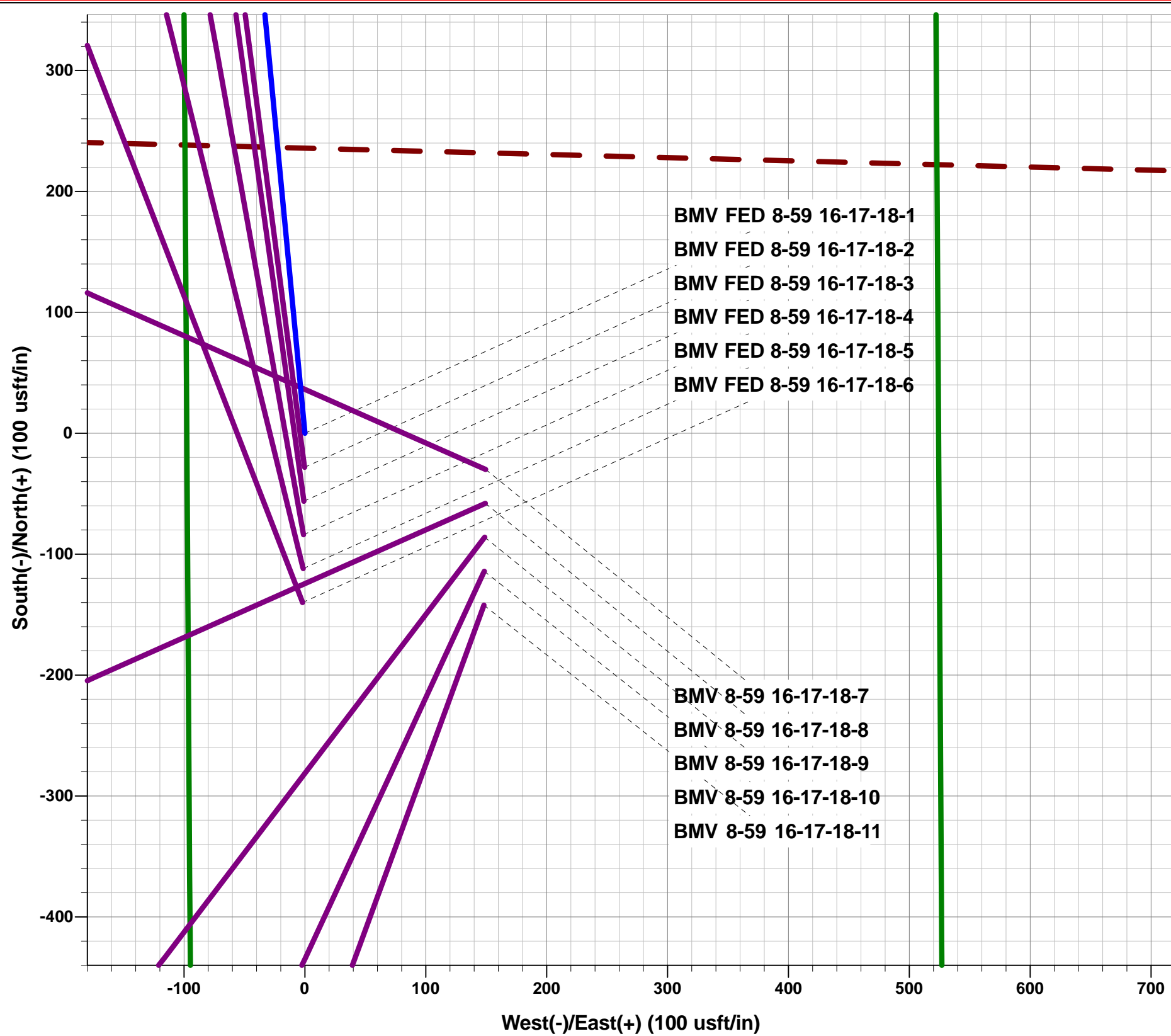
Project: WELD COUNTY, COLORADO (NAD 83)
Site: NW SW SEC. 16 T8N R59W 6th P.M.
Well: BIG MOUNTAIN VIPER FED 8-59 16-17-18-1
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #1

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSect	Dep	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	SHL: 2410ft FSL & 560ft FWL of Sec 16
100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (3°/100ft BUR)
1115.18	1170.34	32.11	354.56	290.84	-27.71	115.44	292.15	EOB TO 32.11° INC
4438.06	5093.32	32.11	354.56	2366.69	-225.48	939.38	2377.41	END OF TANGENT
5453.24	6163.66	0.00	0.00	2657.53	-253.19	1054.82	2669.56	EOD TO VERTICAL
5553.24	6263.66	0.00	0.00	2657.53	-253.19	1054.82	2669.56	KOP (10°/100ft BUR)
6126.20	7163.65	90.00	270.39	2661.43	-826.13	1601.43	3242.52	BPI: 350ft FNL & 300ft FEL of Sec 17
6126.20	14713.00	90.00	270.38	2712.39	-8375.30	8803.55	10791.86	EPI: 350ft FNL & 2557ft FEL of Sec 18
6126.20	14770.98	90.00	270.38	2712.78	-8433.28	8858.86	10849.84	BHL: 350ft FNL & 2615ft FEL of Sec 18

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - BMV FED 8-59 16-17-18-1	5553.24	2657.53	-253.19	40.668719	-103.990006
BPI - BMV FED 8-59 16-17-18-1	6126.20	2661.43	-826.13	40.668730	-103.992071
EPI - BMV FED 8-59 16-17-18-1	6126.20	2712.39	-8375.30	40.668866	-104.019284
BHL - BMV FED 8-59 16-17-18-1	6126.20	2712.78	-8433.28	40.668867	-104.019493



Azimuths to True North
Magnetic North: 7.61°

Magnetic Field
Strength: 52392.3snT
Dip Angle: 67.13°
Date: 28/04/2019
Model: IGRF2015

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
411.20	412.59	PIERRE SHALE (BFH)
3341.20	3798.37	PARKMAN
3846.20	4394.57	SUSSEX
5096.20	5804.50	SHANNON
5871.20	6600.73	SHARON SPRINGS SHALE
5991.20	6762.18	NIOBRARA FORMATION
5996.20	6770.00	NIOBRARA A CHALK
6096.20	6977.43	NIOBRARA B CHALK
6126.20	7163.65	NIOBRARA B LP

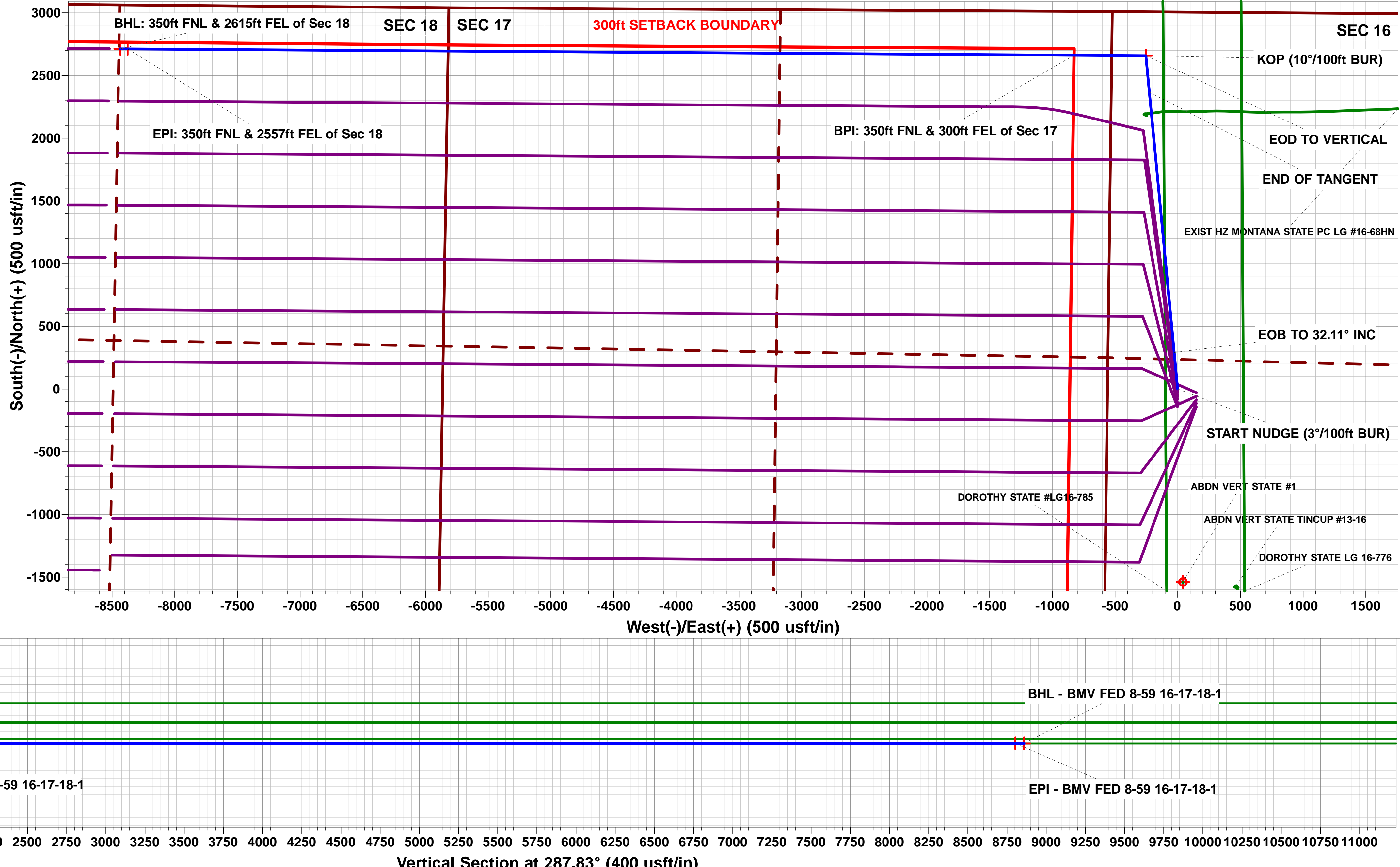
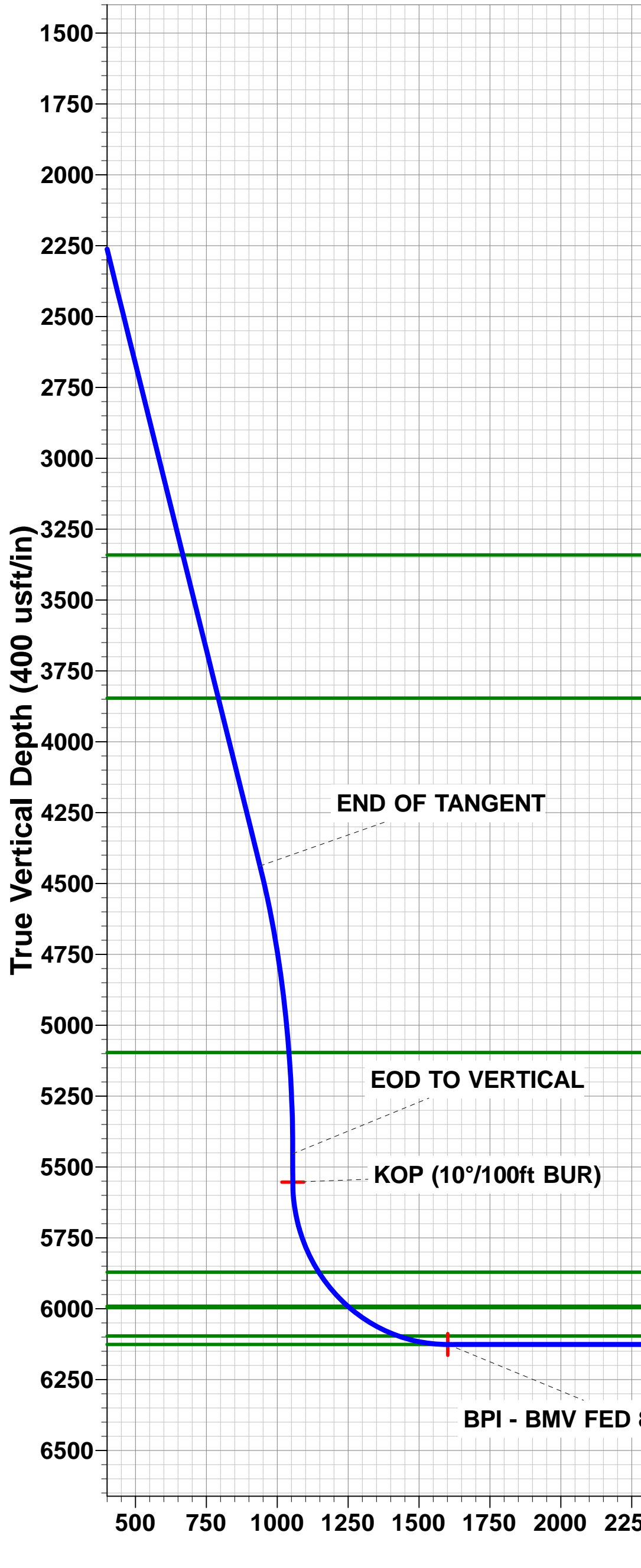
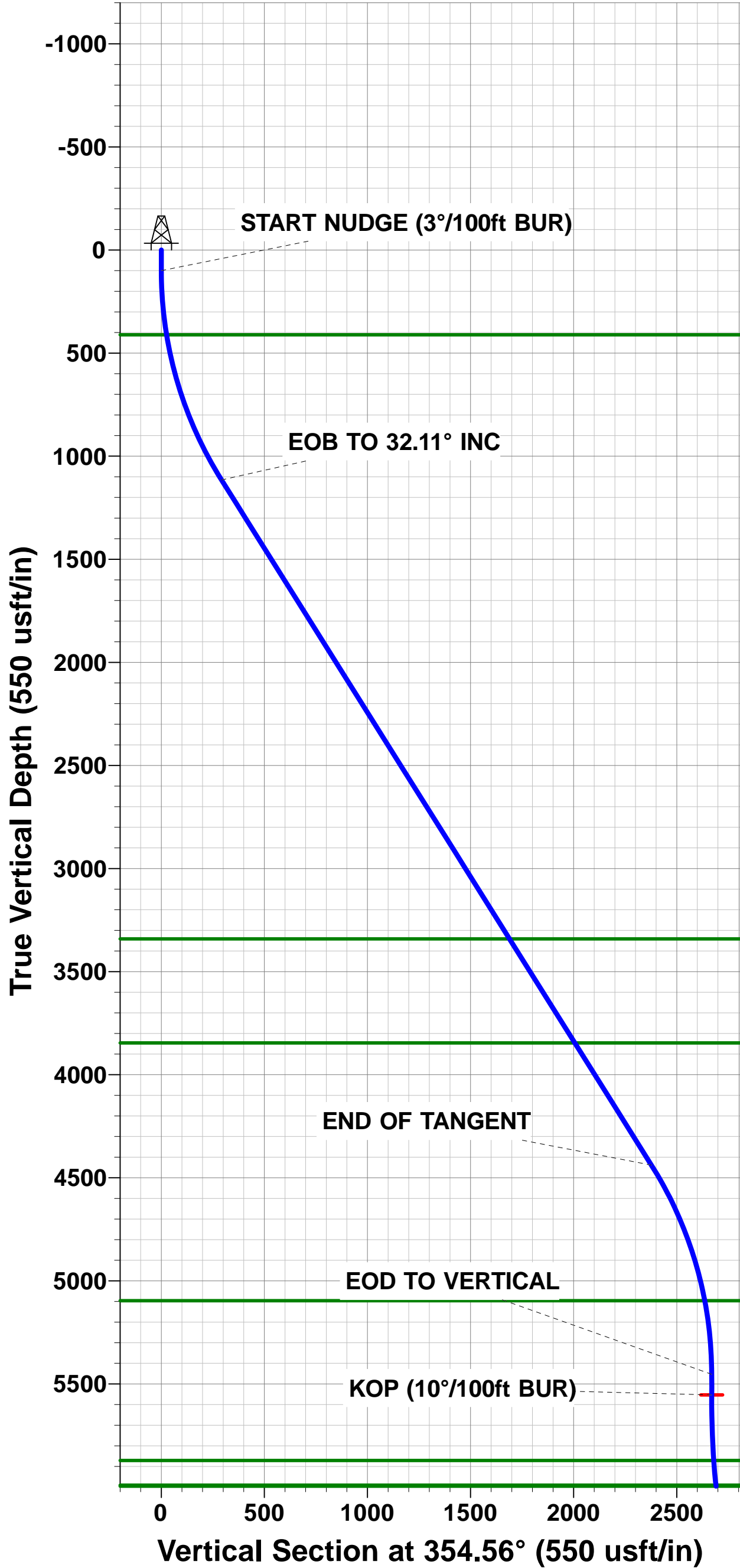
PROPOSED LOCAL COORDINATES:

SHL: 2410ft FSL & 560ft FWL of Sec 16

BEGIN PROD INT: 350ft FNL & 300ft FEL of Sec 17

END PROD INTERVAL: 350ft FNL & 2557ft FEL of Sec 18

BHL: 350ft FNL & 2615ft FEL of Sec 18



Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well BIG MOUNTAIN VIPER FED 8-59 16-17-18-1
Company:	BISON OIL & GAS II, LLC	TVD Reference:	KB 25' @ 4901.20usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB 25' @ 4901.20usft (Original Well Elev)
Site:	NW SW SEC. 16 T8N R59W 6th P.M.	North Reference:	True
Well:	BIG MOUNTAIN VIPER FED 8-59 16-17-18-1	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. 16 T8N R59W 6th P.M.		
Site Position:		Northing:	1,487,370.83 usft
From:	Lat/Long	Easting:	3,419,160.21 usft
Position Uncertainty:	0.00 usft	Slot Radius:	1.10000ft
		Latitude:	40.661425
		Longitude:	-103.989093
		Grid Convergence:	0.98 °

Well	BIG MOUNTAIN VIPER FED 8-59 16-17-18-1		
Well Position	+N-S	0.00 usft	Northing: 1,487,370.83 usft
	+E-W	0.00 usft	Easting: 3,419,160.21 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	40.661425
		Longitude:	-103.989093
		Ground Level:	4,876.20 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	28/04/2019	7.61	67.13	52,392

Design	PROPOSAL #1				
Audit Notes:					
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (°)	
	6,126.20	0.00	0.00	287.83	

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	-4,901.20	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	-4,801.20	0.00	0.00	0.00	0.00	0.00	0.00	
1,170.34	32.11	354.56	1,115.18	-3,786.02	290.84	-27.71	3.00	3.00	0.00	354.56	
5,093.32	32.11	354.56	4,438.06	-463.14	2,366.69	-225.48	0.00	0.00	0.00	0.00	
6,163.66	0.00	0.00	5,453.24	552.04	2,657.53	-253.19	3.00	-3.00	0.00	180.00	
6,263.66	0.00	0.00	5,553.24	652.04	2,657.53	-253.19	0.00	0.00	0.00	0.00	KOP - BMV FED 8-
7,163.65	90.00	270.39	6,126.20	1,225.00	2,661.43	-826.13	10.00	10.00	-9.96	270.39	BPI - BMV FED 8-5
14,713.00	90.00	270.38	6,126.20	1,225.00	2,712.39	-8,375.30	0.00	0.00	0.00	-79.75	EPI - BMV FED 8-5
14,770.98	90.00	270.38	6,126.20	1,225.00	2,712.78	-8,433.28	0.01	0.00	-0.01	-99.56	BHL - BMV FED 8-4

Planning Report



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Site:	NW SW SEC. 16 T8N R59W 6th P.M.	North Reference:	True
Well:	BIG MOUNTAIN VIPER FED 8-59 16-17-18-1	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: 2410ft FSL & 560ft FWL of Sec 16										
0.00	0.00	0.00	0.00	4,901.20	0.00	0.00	0.00	0.00	0.00	0.00
START NUDGE (3°/100ft BUR)										
100.00	0.00	0.00	100.00	4,801.20	0.00	0.00	0.00	0.00	0.00	0.00
200.00	3.00	354.56	199.95	4,701.25	2.61	-0.25	1.03	3.00	3.00	0.00
300.00	6.00	354.56	299.63	4,601.57	10.42	-0.99	4.13	3.00	3.00	0.00
400.00	9.00	354.56	398.77	4,502.43	23.41	-2.23	9.29	3.00	3.00	0.00
PIERRE SHALE (BFH)										
412.59	9.38	354.56	411.20	4,490.00	25.41	-2.42	10.09	3.00	3.00	0.00
500.00	12.00	354.56	497.08	4,404.12	41.55	-3.96	16.49	3.00	3.00	0.00
600.00	15.00	354.56	594.31	4,306.89	64.78	-6.17	25.71	3.00	3.00	0.00
700.00	18.00	354.56	690.18	4,211.02	93.05	-8.87	36.93	3.00	3.00	0.00
800.00	21.00	354.56	784.43	4,116.77	126.28	-12.03	50.12	3.00	3.00	0.00
900.00	24.00	354.56	876.81	4,024.39	164.37	-15.66	65.24	3.00	3.00	0.00
1,000.00	27.00	354.56	967.06	3,934.14	207.22	-19.74	82.25	3.00	3.00	0.00
1,100.00	30.00	354.56	1,054.93	3,846.27	254.72	-24.27	101.10	3.00	3.00	0.00
EOB TO 32.11° INC										
1,170.34	32.11	354.56	1,115.18	3,786.02	290.84	-27.71	115.44	3.00	3.00	0.00
1,200.00	32.11	354.56	1,140.31	3,760.89	306.53	-29.20	121.67	0.00	0.00	0.00
1,300.00	32.11	354.56	1,225.01	3,676.19	359.45	-34.25	142.67	0.00	0.00	0.00
1,400.00	32.11	354.56	1,309.71	3,591.49	412.36	-39.29	163.67	0.00	0.00	0.00
1,500.00	32.11	354.56	1,394.42	3,506.78	465.28	-44.33	184.68	0.00	0.00	0.00
1,600.00	32.11	354.56	1,479.12	3,422.08	518.19	-49.37	205.68	0.00	0.00	0.00
1,700.00	32.11	354.56	1,563.82	3,337.38	571.11	-54.41	226.68	0.00	0.00	0.00
1,800.00	32.11	354.56	1,648.52	3,252.68	624.03	-59.45	247.69	0.00	0.00	0.00
1,900.00	32.11	354.56	1,733.23	3,167.97	676.94	-64.49	268.69	0.00	0.00	0.00
2,000.00	32.11	354.56	1,817.93	3,083.27	729.86	-69.54	289.69	0.00	0.00	0.00
2,100.00	32.11	354.56	1,902.63	2,998.57	782.77	-74.58	310.70	0.00	0.00	0.00
2,200.00	32.11	354.56	1,987.34	2,913.86	835.69	-79.62	331.70	0.00	0.00	0.00
2,300.00	32.11	354.56	2,072.04	2,829.16	888.60	-84.66	352.70	0.00	0.00	0.00
2,400.00	32.11	354.56	2,156.74	2,744.46	941.52	-89.70	373.70	0.00	0.00	0.00
2,500.00	32.11	354.56	2,241.44	2,659.76	994.43	-94.74	394.71	0.00	0.00	0.00
2,600.00	32.11	354.56	2,326.15	2,575.05	1,047.35	-99.78	415.71	0.00	0.00	0.00
2,700.00	32.11	354.56	2,410.85	2,490.35	1,100.26	-104.82	436.71	0.00	0.00	0.00
2,800.00	32.11	354.56	2,495.55	2,405.65	1,153.18	-109.87	457.72	0.00	0.00	0.00
2,900.00	32.11	354.56	2,580.26	2,320.94	1,206.09	-114.91	478.72	0.00	0.00	0.00
3,000.00	32.11	354.56	2,664.96	2,236.24	1,259.01	-119.95	499.72	0.00	0.00	0.00
3,100.00	32.11	354.56	2,749.66	2,151.54	1,311.92	-124.99	520.73	0.00	0.00	0.00
3,200.00	32.11	354.56	2,834.36	2,066.84	1,364.84	-130.03	541.73	0.00	0.00	0.00
3,300.00	32.11	354.56	2,919.07	1,982.13	1,417.75	-135.07	562.73	0.00	0.00	0.00
3,400.00	32.11	354.56	3,003.77	1,897.43	1,470.67	-140.11	583.73	0.00	0.00	0.00
3,500.00	32.11	354.56	3,088.47	1,812.73	1,523.58	-145.16	604.74	0.00	0.00	0.00
3,600.00	32.11	354.56	3,173.17	1,728.03	1,576.50	-150.20	625.74	0.00	0.00	0.00
3,700.00	32.11	354.56	3,257.88	1,643.32	1,629.41	-155.24	646.74	0.00	0.00	0.00
PARKMAN										
3,798.37	32.11	354.56	3,341.20	1,560.00	1,681.47	-160.20	667.40	0.00	0.00	0.00
3,800.00	32.11	354.56	3,342.58	1,558.62	1,682.33	-160.28	667.75	0.00	0.00	0.00
3,900.00	32.11	354.56	3,427.28	1,473.92	1,735.24	-165.32	688.75	0.00	0.00	0.00
4,000.00	32.11	354.56	3,511.99	1,389.21	1,788.16	-170.36	709.75	0.00	0.00	0.00
4,100.00	32.11	354.56	3,596.69	1,304.51	1,841.08	-175.40	730.76	0.00	0.00	0.00
4,200.00	32.11	354.56	3,681.39	1,219.81	1,893.99	-180.45	751.76	0.00	0.00	0.00
4,300.00	32.11	354.56	3,766.09	1,135.11	1,946.91	-185.49	772.76	0.00	0.00	0.00

Planning Report



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Well:	BIG MOUNTAIN VIPER FED 8-59 16-17-18-1	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)
SUSSEX										
4,394.57	32.11	354.56	3,846.20	1,055.00	1,996.95	-190.25	792.62	0.00	0.00	0.00
4,400.00	32.11	354.56	3,850.80	1,050.40	1,999.82	-190.53	793.76	0.00	0.00	0.00
4,500.00	32.11	354.56	3,935.50	965.70	2,052.74	-195.57	814.77	0.00	0.00	0.00
4,600.00	32.11	354.56	4,020.20	881.00	2,105.65	-200.61	835.77	0.00	0.00	0.00
4,700.00	32.11	354.56	4,104.91	796.29	2,158.57	-205.65	856.77	0.00	0.00	0.00
4,800.00	32.11	354.56	4,189.61	711.59	2,211.48	-210.69	877.78	0.00	0.00	0.00
4,900.00	32.11	354.56	4,274.31	626.89	2,264.40	-215.74	898.78	0.00	0.00	0.00
5,000.00	32.11	354.56	4,359.01	542.19	2,317.31	-220.78	919.78	0.00	0.00	0.00
END OF TANGENT										
5,093.32	32.11	354.56	4,438.06	463.14	2,366.69	-225.48	939.38	0.00	0.00	0.00
5,100.00	31.91	354.56	4,443.72	457.48	2,370.22	-225.82	940.78	3.00	-3.00	0.00
5,200.00	28.91	354.56	4,529.96	371.24	2,420.60	-230.62	960.78	3.00	-3.00	0.00
5,300.00	25.91	354.56	4,618.72	282.48	2,466.42	-234.98	978.97	3.00	-3.00	0.00
5,400.00	22.91	354.56	4,709.77	191.43	2,507.56	-238.90	995.29	3.00	-3.00	0.00
5,500.00	19.91	354.56	4,802.86	98.34	2,543.89	-242.36	1,009.72	3.00	-3.00	0.00
5,600.00	16.91	354.56	4,897.73	3.47	2,575.33	-245.36	1,022.19	3.00	-3.00	0.00
5,700.00	13.91	354.56	4,994.12	-92.92	2,601.78	-247.88	1,032.69	3.00	-3.00	0.00
5,800.00	10.91	354.56	5,091.78	-190.58	2,623.17	-249.92	1,041.18	3.00	-3.00	0.00
SHANNON										
5,804.50	10.77	354.56	5,096.20	-195.00	2,624.01	-250.00	1,041.52	3.00	-3.00	0.00
5,900.00	7.91	354.56	5,190.42	-289.22	2,639.44	-251.47	1,047.64	3.00	-3.00	0.00
6,000.00	4.91	354.56	5,289.78	-388.58	2,650.55	-252.53	1,052.05	3.00	-3.00	0.00
6,100.00	1.91	354.56	5,389.60	-488.40	2,656.47	-253.09	1,054.40	3.00	-3.00	0.00
EOD TO VERTICAL										
6,163.66	0.00	0.00	5,453.24	-552.04	2,657.53	-253.19	1,054.82	3.00	-3.00	0.00
6,200.00	0.00	0.00	5,489.58	-588.38	2,657.53	-253.19	1,054.82	0.00	0.00	0.00
KOP (10°/100ft BUR)										
6,263.66	0.00	0.00	5,553.24	-652.04	2,657.53	-253.19	1,054.82	0.00	0.00	0.00
6,300.00	3.63	270.39	5,589.56	-688.36	2,657.54	-254.34	1,055.92	10.00	10.00	0.00
6,400.00	13.63	270.39	5,688.30	-787.10	2,657.64	-269.34	1,070.22	10.00	10.00	0.00
6,500.00	23.63	270.39	5,782.94	-881.74	2,657.86	-301.25	1,100.67	10.00	10.00	0.00
6,600.00	33.63	270.39	5,870.60	-969.40	2,658.18	-349.11	1,146.33	10.00	10.00	0.00
SHARON SPRINGS SHALE										
6,600.73	33.71	270.39	5,871.20	-970.00	2,658.19	-349.51	1,146.71	10.00	10.00	0.00
6,700.00	43.63	270.39	5,948.61	-1,047.41	2,658.61	-411.46	1,205.82	10.00	10.00	0.00
NIORARA FORMATION										
6,762.18	49.85	270.39	5,991.20	-1,090.00	2,658.92	-456.72	1,249.00	10.00	10.00	0.00
NIORARA A CHALK										
6,770.00	50.63	270.39	5,996.20	-1,095.00	2,658.96	-462.73	1,254.73	10.00	10.00	0.00
6,800.00	53.63	270.39	6,014.61	-1,113.41	2,659.12	-486.41	1,277.33	10.00	10.00	0.00
6,900.00	63.63	270.39	6,066.60	-1,165.40	2,659.70	-571.69	1,358.68	10.00	10.00	0.00
NIORARA B CHALK										
6,977.43	71.38	270.39	6,096.20	-1,195.00	2,660.19	-643.17	1,426.88	10.00	10.00	0.00
7,000.00	73.63	270.39	6,102.98	-1,201.78	2,660.33	-664.70	1,447.42	10.00	10.00	0.00
7,100.00	83.63	270.39	6,122.67	-1,221.47	2,661.00	-762.61	1,540.83	10.00	10.00	0.00
BPI: 350ft FNL & 300ft FEL of Sec 17 - NIOBRARA B LP										
7,163.65	90.00	270.39	6,126.20	-1,225.00	2,661.43	-826.13	1,601.43	10.00	10.00	0.00
7,200.00	90.00	270.39	6,126.20	-1,225.00	2,661.68	-862.48	1,636.11	0.00	0.00	0.00
7,300.00	90.00	270.39	6,126.20	-1,225.00	2,662.36	-962.47	1,731.51	0.00	0.00	0.00
7,400.00	90.00	270.39	6,126.20	-1,225.00	2,663.04	-1,062.47	1,826.91	0.00	0.00	0.00
7,500.00	90.00	270.39	6,126.20	-1,225.00	2,663.72	-1,162.47	1,922.31	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well BIG MOUNTAIN VIPER FED 8-59 16-17-18-1
Company:	BISON OIL & GAS II, LLC	TVD Reference:	KB 25' @ 4901.20usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB 25' @ 4901.20usft (Original Well Elev)
Site:	NW SW SEC. 16 T8N R59W 6th P.M.	North Reference:	True
Well:	BIG MOUNTAIN VIPER FED 8-59 16-17-18-1	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)
7,600.00	90.00	270.39	6,126.20	-1,225.00	2,664.40	-1,262.47	2,017.72	0.00	0.00	0.00
7,700.00	90.00	270.39	6,126.21	-1,225.01	2,665.08	-1,362.46	2,113.12	0.00	0.00	0.00
7,800.00	90.00	270.39	6,126.21	-1,225.01	2,665.76	-1,462.46	2,208.52	0.00	0.00	0.00
7,900.00	90.00	270.39	6,126.21	-1,225.01	2,666.44	-1,562.46	2,303.92	0.00	0.00	0.00
8,000.00	90.00	270.39	6,126.21	-1,225.01	2,667.12	-1,662.46	2,399.32	0.00	0.00	0.00
8,100.00	90.00	270.39	6,126.21	-1,225.01	2,667.80	-1,762.46	2,494.73	0.00	0.00	0.00
8,200.00	90.00	270.39	6,126.21	-1,225.01	2,668.48	-1,862.45	2,590.13	0.00	0.00	0.00
8,300.00	90.00	270.39	6,126.21	-1,225.01	2,669.16	-1,962.45	2,685.53	0.00	0.00	0.00
8,400.00	90.00	270.39	6,126.21	-1,225.01	2,669.84	-2,062.45	2,780.93	0.00	0.00	0.00
8,500.00	90.00	270.39	6,126.21	-1,225.01	2,670.52	-2,162.45	2,876.33	0.00	0.00	0.00
8,600.00	90.00	270.39	6,126.21	-1,225.01	2,671.20	-2,262.44	2,971.74	0.00	0.00	0.00
8,700.00	90.00	270.39	6,126.21	-1,225.01	2,671.88	-2,362.44	3,067.14	0.00	0.00	0.00
8,800.00	90.00	270.39	6,126.21	-1,225.01	2,672.56	-2,462.44	3,162.54	0.00	0.00	0.00
8,900.00	90.00	270.39	6,126.21	-1,225.01	2,673.23	-2,562.44	3,257.94	0.00	0.00	0.00
9,000.00	90.00	270.39	6,126.22	-1,225.02	2,673.91	-2,662.43	3,353.34	0.00	0.00	0.00
9,100.00	90.00	270.39	6,126.22	-1,225.02	2,674.59	-2,762.43	3,448.74	0.00	0.00	0.00
9,200.00	90.00	270.39	6,126.22	-1,225.02	2,675.27	-2,862.43	3,544.14	0.00	0.00	0.00
9,300.00	90.00	270.39	6,126.22	-1,225.02	2,675.95	-2,962.43	3,639.55	0.00	0.00	0.00
9,400.00	90.00	270.39	6,126.22	-1,225.02	2,676.62	-3,062.43	3,734.95	0.00	0.00	0.00
9,500.00	90.00	270.39	6,126.22	-1,225.02	2,677.30	-3,162.42	3,830.35	0.00	0.00	0.00
9,600.00	90.00	270.39	6,126.22	-1,225.02	2,677.98	-3,262.42	3,925.75	0.00	0.00	0.00
9,700.00	90.00	270.39	6,126.22	-1,225.02	2,678.65	-3,362.42	4,021.15	0.00	0.00	0.00
9,800.00	90.00	270.39	6,126.22	-1,225.02	2,679.33	-3,462.42	4,116.55	0.00	0.00	0.00
9,900.00	90.00	270.39	6,126.22	-1,225.02	2,680.01	-3,562.41	4,211.95	0.00	0.00	0.00
10,000.00	90.00	270.39	6,126.22	-1,225.02	2,680.69	-3,662.41	4,307.35	0.00	0.00	0.00
10,100.00	90.00	270.39	6,126.22	-1,225.02	2,681.36	-3,762.41	4,402.76	0.00	0.00	0.00
10,200.00	90.00	270.39	6,126.22	-1,225.02	2,682.04	-3,862.41	4,498.16	0.00	0.00	0.00
10,300.00	90.00	270.39	6,126.22	-1,225.02	2,682.71	-3,962.40	4,593.56	0.00	0.00	0.00
10,400.00	90.00	270.39	6,126.22	-1,225.02	2,683.39	-4,062.40	4,688.96	0.00	0.00	0.00
10,500.00	90.00	270.39	6,126.22	-1,225.02	2,684.07	-4,162.40	4,784.36	0.00	0.00	0.00
10,600.00	90.00	270.39	6,126.22	-1,225.02	2,684.74	-4,262.40	4,879.76	0.00	0.00	0.00
10,700.00	90.00	270.39	6,126.22	-1,225.02	2,685.42	-4,362.40	4,975.16	0.00	0.00	0.00
10,800.00	90.00	270.39	6,126.22	-1,225.02	2,686.09	-4,462.39	5,070.56	0.00	0.00	0.00
10,900.00	90.00	270.39	6,126.22	-1,225.02	2,686.77	-4,562.39	5,165.96	0.00	0.00	0.00
11,000.00	90.00	270.39	6,126.22	-1,225.02	2,687.44	-4,662.39	5,261.36	0.00	0.00	0.00
11,100.00	90.00	270.39	6,126.22	-1,225.02	2,688.12	-4,762.39	5,356.76	0.00	0.00	0.00
11,200.00	90.00	270.39	6,126.22	-1,225.02	2,688.79	-4,862.38	5,452.16	0.00	0.00	0.00
11,300.00	90.00	270.39	6,126.22	-1,225.02	2,689.47	-4,962.38	5,547.56	0.00	0.00	0.00
11,400.00	90.00	270.39	6,126.22	-1,225.02	2,690.14	-5,062.38	5,642.96	0.00	0.00	0.00
11,500.00	90.00	270.39	6,126.22	-1,225.02	2,690.82	-5,162.38	5,738.36	0.00	0.00	0.00
11,600.00	90.00	270.39	6,126.22	-1,225.02	2,691.49	-5,262.38	5,833.76	0.00	0.00	0.00
11,700.00	90.00	270.39	6,126.22	-1,225.02	2,692.16	-5,362.37	5,929.16	0.00	0.00	0.00
11,800.00	90.00	270.39	6,126.22	-1,225.02	2,692.84	-5,462.37	6,024.56	0.00	0.00	0.00
11,900.00	90.00	270.39	6,126.22	-1,225.02	2,693.51	-5,562.37	6,119.96	0.00	0.00	0.00
12,000.00	90.00	270.39	6,126.22	-1,225.02	2,694.18	-5,662.37	6,215.36	0.00	0.00	0.00
12,100.00	90.00	270.39	6,126.22	-1,225.02	2,694.86	-5,762.36	6,310.76	0.00	0.00	0.00
12,200.00	90.00	270.39	6,126.22	-1,225.02	2,695.53	-5,862.36	6,406.16	0.00	0.00	0.00
12,300.00	90.00	270.39	6,126.22	-1,225.02	2,696.20	-5,962.36	6,501.56	0.00	0.00	0.00
12,400.00	90.00	270.39	6,126.22	-1,225.02	2,696.88	-6,062.36	6,596.96	0.00	0.00	0.00
12,500.00	90.00	270.39	6,126.22	-1,225.02	2,697.55	-6,162.35	6,692.36	0.00	0.00	0.00
12,600.00	90.00	270.39	6,126.22	-1,225.02	2,698.22	-6,262.35	6,787.76	0.00	0.00	0.00
12,700.00	90.00	270.39	6,126.22	-1,225.02	2,698.89	-6,362.35	6,883.16	0.00	0.00	0.00
12,800.00	90.00	270.39	6,126.22	-1,225.02	2,699.57	-6,462.35	6,978.56	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well BIG MOUNTAIN VIPER FED 8-59 16-17-18-1
Company:	BISON OIL & GAS II, LLC	TVD Reference:	KB 25' @ 4901.20usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB 25' @ 4901.20usft (Original Well Elev)
Site:	NW SW SEC. 16 T8N R59W 6th P.M.	North Reference:	True
Well:	BIG MOUNTAIN VIPER FED 8-59 16-17-18-1	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)
12,900.00	90.00	270.38	6,126.22	-1,225.02	2,700.24	-6,562.35	7,073.96	0.00	0.00	0.00
13,000.00	90.00	270.38	6,126.21	-1,225.01	2,700.91	-6,662.34	7,169.36	0.00	0.00	0.00
13,100.00	90.00	270.38	6,126.21	-1,225.01	2,701.58	-6,762.34	7,264.76	0.00	0.00	0.00
13,200.00	90.00	270.38	6,126.21	-1,225.01	2,702.25	-6,862.34	7,360.16	0.00	0.00	0.00
13,300.00	90.00	270.38	6,126.21	-1,225.01	2,702.92	-6,962.34	7,455.56	0.00	0.00	0.00
13,400.00	90.00	270.38	6,126.21	-1,225.01	2,703.59	-7,062.33	7,550.96	0.00	0.00	0.00
13,500.00	90.00	270.38	6,126.21	-1,225.01	2,704.27	-7,162.33	7,646.36	0.00	0.00	0.00
13,600.00	90.00	270.38	6,126.21	-1,225.01	2,704.94	-7,262.33	7,741.76	0.00	0.00	0.00
13,700.00	90.00	270.38	6,126.21	-1,225.01	2,705.61	-7,362.33	7,837.16	0.00	0.00	0.00
13,800.00	90.00	270.38	6,126.21	-1,225.01	2,706.28	-7,462.33	7,932.56	0.00	0.00	0.00
13,900.00	90.00	270.38	6,126.21	-1,225.01	2,706.95	-7,562.32	8,027.96	0.00	0.00	0.00
14,000.00	90.00	270.38	6,126.21	-1,225.01	2,707.62	-7,662.32	8,123.36	0.00	0.00	0.00
14,100.00	90.00	270.38	6,126.21	-1,225.01	2,708.29	-7,762.32	8,218.76	0.00	0.00	0.00
14,200.00	90.00	270.38	6,126.21	-1,225.01	2,708.96	-7,862.32	8,314.15	0.00	0.00	0.00
14,300.00	90.00	270.38	6,126.20	-1,225.00	2,709.63	-7,962.31	8,409.55	0.00	0.00	0.00
14,400.00	90.00	270.38	6,126.20	-1,225.00	2,710.30	-8,062.31	8,504.95	0.00	0.00	0.00
14,500.00	90.00	270.38	6,126.20	-1,225.00	2,710.97	-8,162.31	8,600.35	0.00	0.00	0.00
14,600.00	90.00	270.38	6,126.20	-1,225.00	2,711.64	-8,262.31	8,695.75	0.00	0.00	0.00
14,700.00	90.00	270.38	6,126.20	-1,225.00	2,712.31	-8,362.31	8,791.15	0.00	0.00	0.00
EPI: 350ft FNL & 2557ft FEL of Sec 18										
14,713.00	90.00	270.38	6,126.20	-1,225.00	2,712.39	-8,375.30	8,803.55	0.00	0.00	0.00
BHL: 350ft FNL & 2615ft FEL of Sec 18										
14,770.98	90.00	270.38	6,126.20	-1,225.00	2,712.78	-8,433.28	8,858.86	0.01	0.00	-0.01

Formations

MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
412.59	411.20	PIERRE SHALE (BFH)			
3,798.37	3,341.20	PARKMAN			
4,394.57	3,846.20	SUSSEX			
5,804.50	5,096.20	SHANNON			
6,600.73	5,871.20	SHARON SPRINGS SHALE			
6,762.18	5,991.20	NIOBRARA FORMATION			
6,770.00	5,996.20	NIOBRARA A CHALK			
6,977.43	6,096.20	NIOBRARA B CHALK			
7,163.65	6,126.20	NIOBRARA B LP			

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well BIG MOUNTAIN VIPER FED 8-59 16-17-18-1
Company:	BISON OIL & GAS II, LLC	TVD Reference:	KB 25' @ 4901.20usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB 25' @ 4901.20usft (Original Well Elev)
Site:	NW SW SEC. 16 T8N R59W 6th P.M.	North Reference:	True
Well:	BIG MOUNTAIN VIPER FED 8-59 16-17-18-1	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)	
0.00	0.00	0.00	0.00	SHL: 2410ft FSL & 560ft FWL of Sec 16
100.00	100.00	0.00	0.00	START NUDGE (3°/100ft BUR)
1,170.34	1,115.18	290.84	-27.71	EOB TO 32.11° INC
5,093.32	4,438.06	2,366.69	-225.48	END OF TANGENT
6,163.66	5,453.24	2,657.53	-253.19	EOD TO VERTICAL
6,263.66	5,553.24	2,657.53	-253.19	KOP (10°/100ft BUR)
7,163.65	6,126.20	2,661.43	-826.13	BPI: 350ft FNL & 300ft FEL of Sec 17
14,713.00	6,126.20	2,712.39	-8,375.30	EPI: 350ft FNL & 2557ft FEL of Sec 18
14,770.98	6,126.20	2,712.78	-8,433.28	BHL: 350ft FNL & 2615ft FEL of Sec 18