

MALLARD EXPLORATION

WELD COUNTY, COLORADO (NAD 83)

NE NW SEC. 21 T8N R60W 6th P.M.

GOLDENEYE FED 21-10HN

ORIGINAL WELLBORE

07 May, 2018

Plan: PROPOSAL #1





Project: WELD COUNTY, COLORADO (NAD 83)
Site: NE NW SEC. 21 T8N R60W 6th P.M.
Well: GOLDENEYE FED 21-10HN
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #1

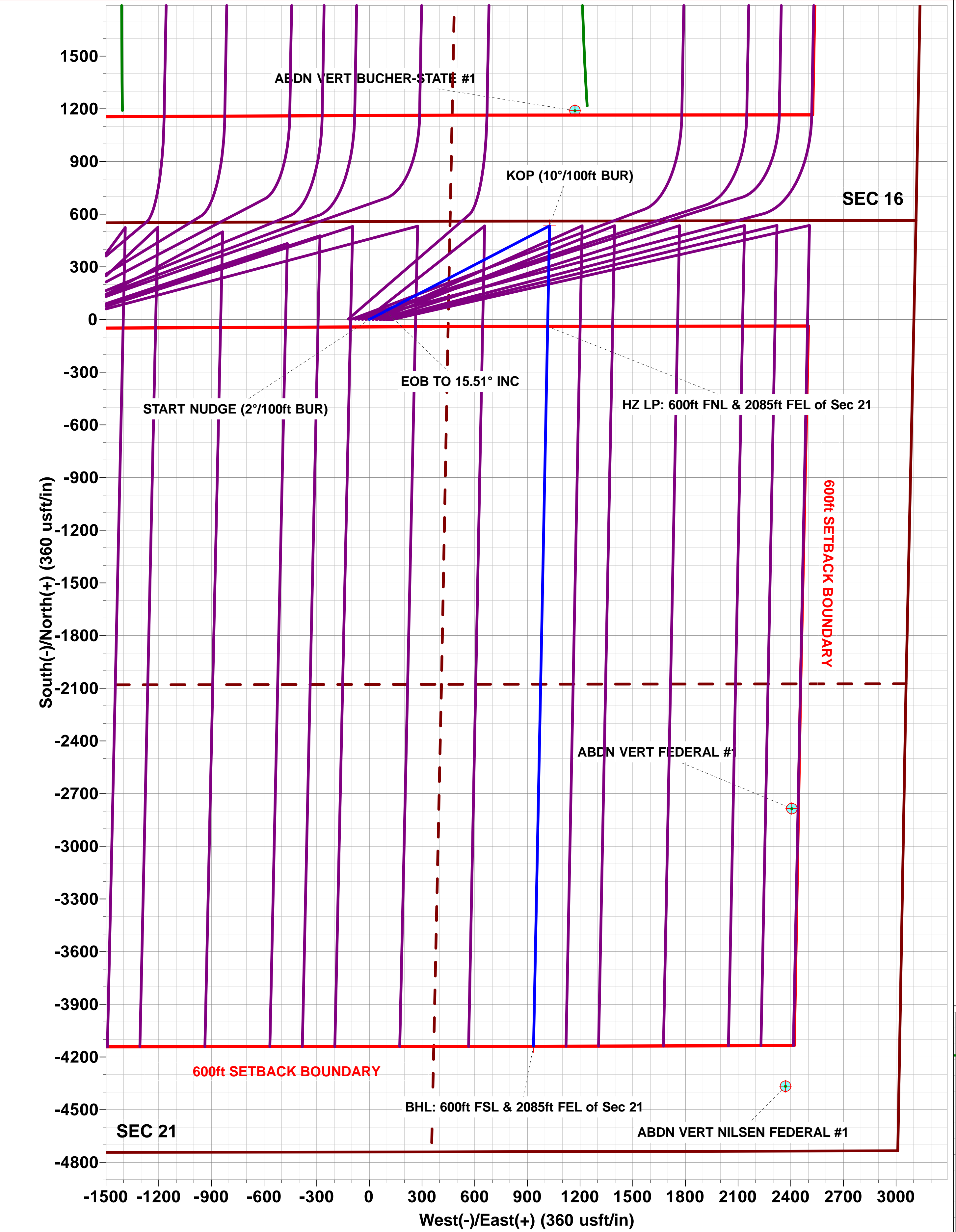
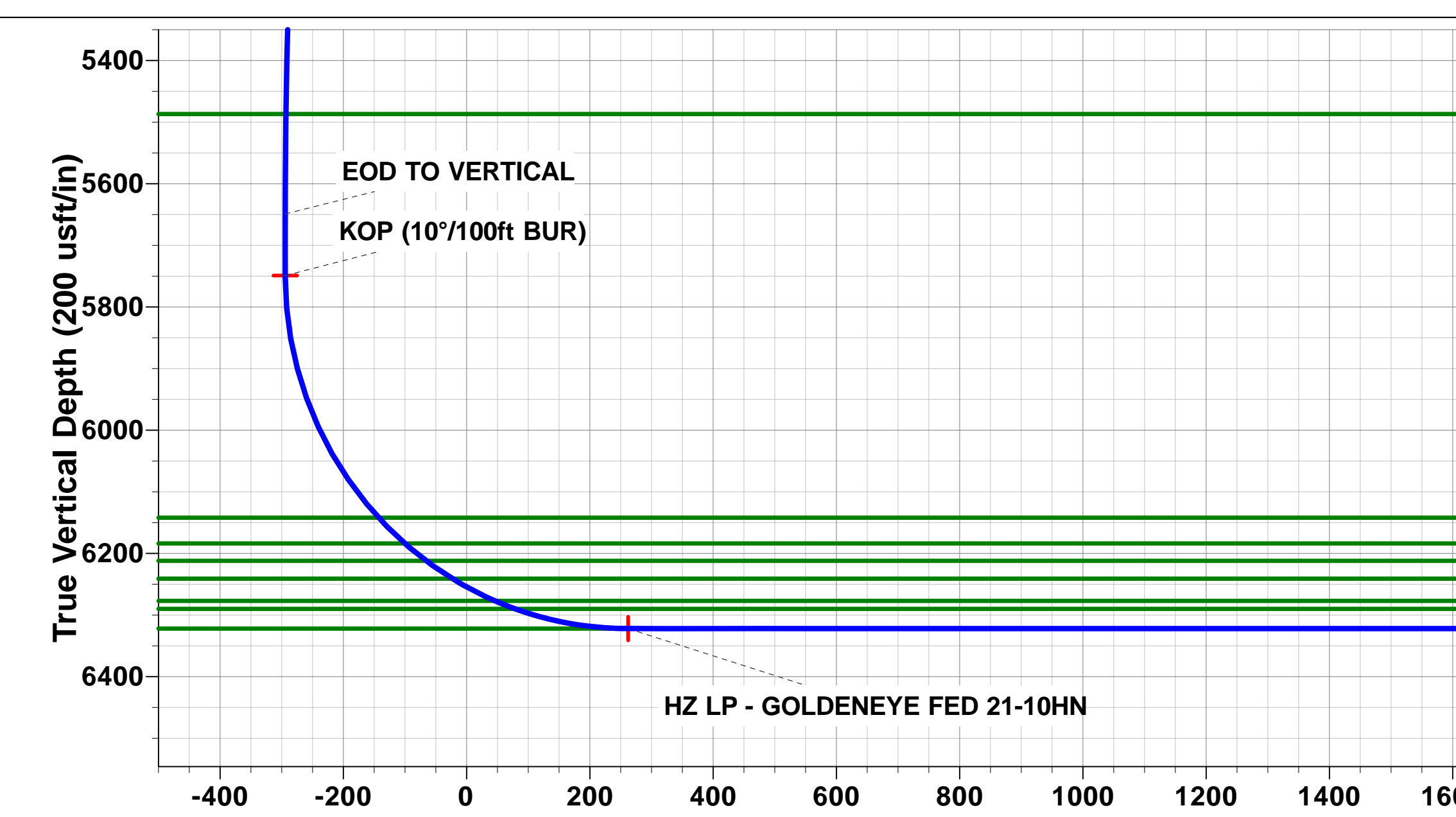
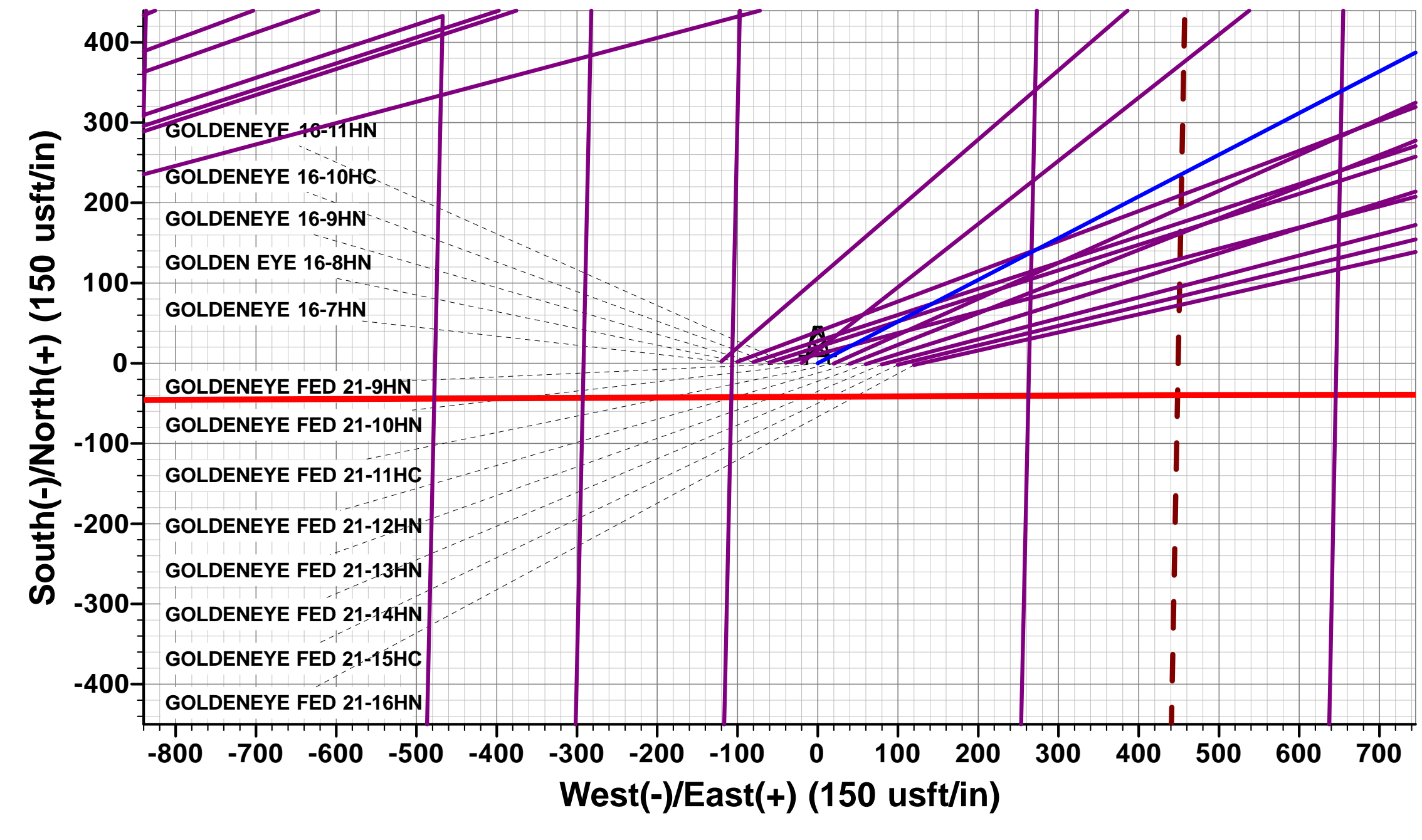
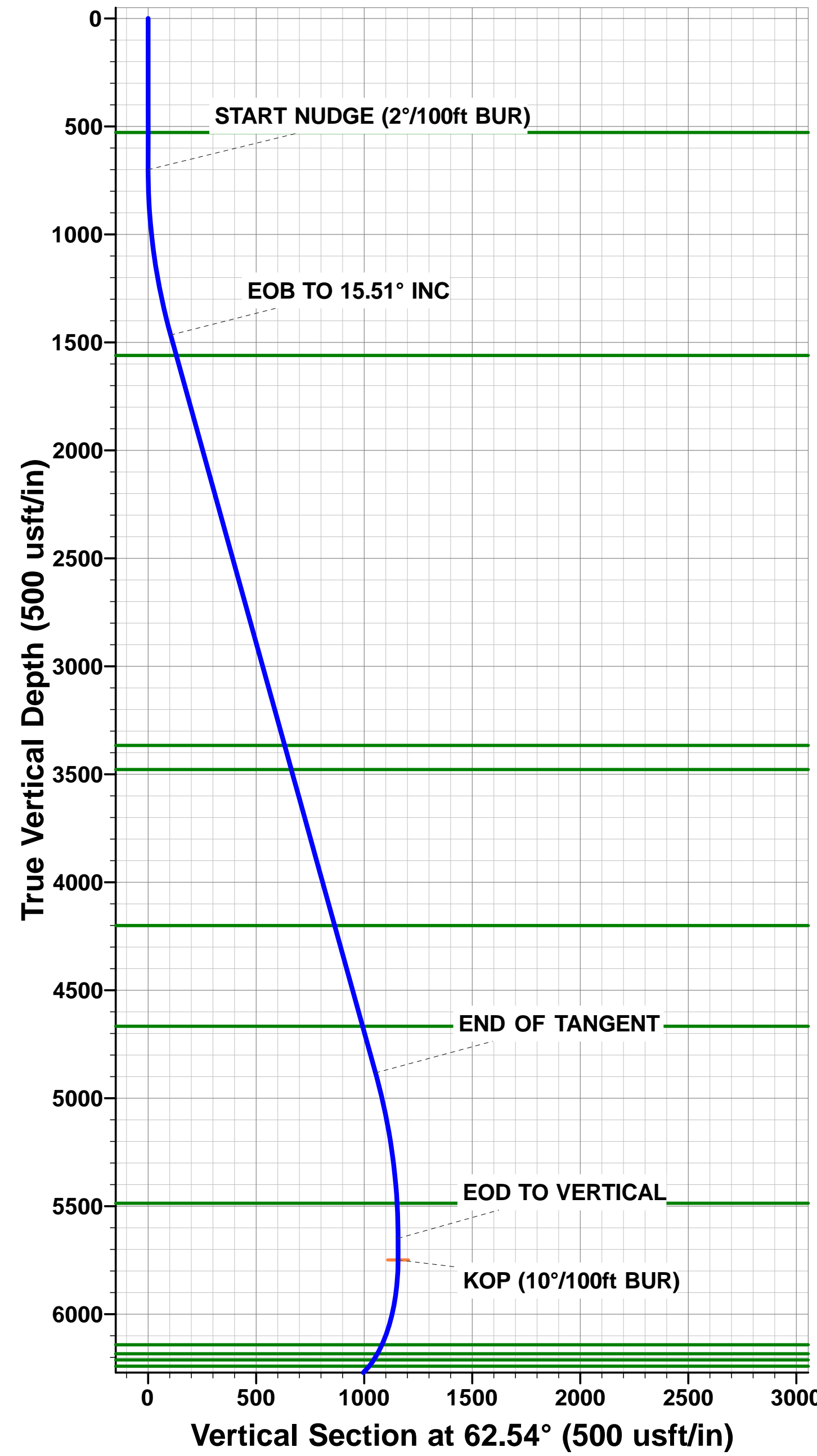
ANNOTATIONS									
TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Dep	Annotation	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	SHL: 558ft FNL & 2192ft FWL of Sec 21	
700.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)	
1466.04	1475.48	15.51	62.54	48.11	92.56	-26.53	104.32	EOB TO 15.51° INC	
4883.00	5021.56	15.51	62.54	485.42	933.92	-267.67	1052.54	END OF TANGENT	
5649.04	5797.04	0.00	0.00	533.53	1026.48	-294.20	1156.86	EOD TO VERTICAL	
5749.04	5897.04	0.00	0.00	533.53	1026.48	-294.20	1156.86	KOP (10°/100ft BUR)	
6322.00	6797.04	90.00	181.12	-39.32	1015.28	262.10	1729.81	HZ LP: 600ft FNL & 2085ft FEL of Sec 21	
6322.00	10897.96	90.00	181.12	-4139.46	935.24	4243.79	5830.73	BHL: 600ft FSL & 2085ft FEL of Sec 21	

PROPOSED LOCAL COORDINATES:

SHL: 558ft FNL & 2192ft FWL Sec 21
HZ LP: 600ft FNL & 2085ft FEL Sec 21

BHL: 600ft FSL & 2085ft FEL of Sec 21

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - GOLDENEYE FED 21-10HN	5749.04	533.53	1026.48	40.655014	-104.094363
HZ LP - GOLDENEYE FED 21-10HN	6322.00	-39.32	1015.28	40.653442	-104.094403
BHL - GOLDENEYE FED 21-10HN	6322.00	-4139.46	935.24	40.642188	-104.094692



Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well GOLDENEYE FED 21-10HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4954.00usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4954.00usft (Original Well Elev)
Site:	NE NW SEC. 21 T8N R60W 6th P.M.	North Reference:	True
Well:	GOLDENEYE FED 21-10HN	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	NE NW SEC. 21 T8N R60W 6th P.M.		
Site Position:		Northing:	1,484,005.35 usft
From:	Lat/Long	Easting:	3,389,097.57 usft
Position Uncertainty:	0.00 usft	Slot Radius:	1.10000ft
		Latitude:	40.653544
		Longitude:	-104.097630
		Grid Convergence:	0.91 °

Well	GOLDENEYE FED 21-10HN		
Well Position	+N/-S	2.18 usft	Northing:
	+E/-W	-119.87 usft	Easting:
Position Uncertainty		0.00 usft	Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	07/05/2018	7.78	67.13	52,489

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 (°)
	0.00	0.00	0.00	167.27

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	-4,954.00	0.00	0.00	0.00	0.00	0.00	0.00	
700.00	0.00	0.00	700.00	-4,254.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,475.48	15.51	62.54	1,466.04	-3,487.96	48.11	92.56	2.00	2.00	0.00	62.54	
5,021.56	15.51	62.54	4,883.00	-71.00	485.42	933.92	0.00	0.00	0.00	0.00	
5,797.04	0.00	0.00	5,649.04	695.04	533.53	1,026.48	2.00	-2.00	0.00	180.00	
5,897.04	0.00	0.00	5,749.04	795.04	533.53	1,026.48	0.00	0.00	0.00	0.00	KOP - GOLDENEYE
6,797.04	90.00	181.12	6,322.00	1,368.00	-39.32	1,015.28	10.00	10.00	-19.88	181.12	HZ LP - GOLDENEYE
10,897.96	90.00	181.12	6,322.00	1,368.00	-4,139.46	935.24	0.00	0.00	0.00	-84.00	BHL - GOLDENEYE

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Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4954.00usft (Original Well Elev)
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Well:	GOLDENEYE FED 21-10HN	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: 558ft FNL & 2192ft FWL of Sec 21										
0.00	0.00	0.00	0.00	4,954.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	4,854.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	4,754.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	4,654.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	4,554.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	4,454.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills Base										
528.00	0.00	0.00	528.00	4,426.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	4,354.00	0.00	0.00	0.00	0.00	0.00	0.00
START NUDGE (2°/100ft BUR)										
700.00	0.00	0.00	700.00	4,254.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	2.00	62.54	799.98	4,154.02	0.80	1.55	-0.44	2.00	2.00	0.00
900.00	4.00	62.54	899.84	4,054.16	3.22	6.19	-1.77	2.00	2.00	0.00
1,000.00	6.00	62.54	999.45	3,954.55	7.24	13.92	-3.99	2.00	2.00	0.00
1,100.00	8.00	62.54	1,098.70	3,855.30	12.86	24.74	-7.09	2.00	2.00	0.00
1,200.00	10.00	62.54	1,197.47	3,756.53	20.07	38.62	-11.07	2.00	2.00	0.00
1,300.00	12.00	62.54	1,295.62	3,658.38	28.87	55.55	-15.92	2.00	2.00	0.00
1,400.00	14.00	62.54	1,393.06	3,560.94	39.25	75.51	-21.64	2.00	2.00	0.00
EOB TO 15.51° INC										
1,475.48	15.51	62.54	1,466.04	3,487.96	48.11	92.56	-26.53	2.00	2.00	0.00
1,500.00	15.51	62.54	1,489.67	3,464.33	51.13	98.38	-28.20	0.00	0.00	0.00
Pierre Shale Top										
1,574.02	15.51	62.54	1,561.00	3,393.00	60.26	115.94	-33.23	0.00	0.00	0.00
1,600.00	15.51	62.54	1,586.03	3,367.97	63.47	122.11	-35.00	0.00	0.00	0.00
1,700.00	15.51	62.54	1,682.39	3,271.61	75.80	145.83	-41.80	0.00	0.00	0.00
1,800.00	15.51	62.54	1,778.75	3,175.25	88.13	169.56	-48.60	0.00	0.00	0.00
1,900.00	15.51	62.54	1,875.11	3,078.89	100.46	193.29	-55.40	0.00	0.00	0.00
2,000.00	15.51	62.54	1,971.46	2,982.54	112.80	217.01	-62.20	0.00	0.00	0.00
2,100.00	15.51	62.54	2,067.82	2,886.18	125.13	240.74	-69.00	0.00	0.00	0.00
2,200.00	15.51	62.54	2,164.18	2,789.82	137.46	264.46	-75.80	0.00	0.00	0.00
2,300.00	15.51	62.54	2,260.54	2,693.46	149.79	288.19	-82.60	0.00	0.00	0.00
2,400.00	15.51	62.54	2,356.90	2,597.10	162.12	311.92	-89.40	0.00	0.00	0.00
2,500.00	15.51	62.54	2,453.26	2,500.74	174.46	335.64	-96.20	0.00	0.00	0.00
2,600.00	15.51	62.54	2,549.62	2,404.38	186.79	359.37	-103.00	0.00	0.00	0.00
2,700.00	15.51	62.54	2,645.97	2,308.03	199.12	383.10	-109.80	0.00	0.00	0.00
2,800.00	15.51	62.54	2,742.33	2,211.67	211.45	406.82	-116.60	0.00	0.00	0.00
2,900.00	15.51	62.54	2,838.69	2,115.31	223.79	430.55	-123.40	0.00	0.00	0.00
3,000.00	15.51	62.54	2,935.05	2,018.95	236.12	454.28	-130.20	0.00	0.00	0.00
3,100.00	15.51	62.54	3,031.41	1,922.59	248.45	478.00	-137.00	0.00	0.00	0.00
3,200.00	15.51	62.54	3,127.77	1,826.23	260.78	501.73	-143.80	0.00	0.00	0.00
3,300.00	15.51	62.54	3,224.13	1,729.87	273.11	525.45	-150.60	0.00	0.00	0.00
3,400.00	15.51	62.54	3,320.48	1,633.52	285.45	549.18	-157.40	0.00	0.00	0.00
Richard Sandstone										
3,448.27	15.51	62.54	3,367.00	1,587.00	291.40	560.63	-160.68	0.00	0.00	0.00
3,500.00	15.51	62.54	3,416.84	1,537.16	297.78	572.91	-164.20	0.00	0.00	0.00
Parkman Sandstone										
3,563.47	15.51	62.54	3,478.00	1,476.00	305.60	587.97	-168.52	0.00	0.00	0.00
3,600.00	15.51	62.54	3,513.20	1,440.80	310.11	596.63	-171.00	0.00	0.00	0.00
3,700.00	15.51	62.54	3,609.56	1,344.44	322.44	620.36	-177.80	0.00	0.00	0.00
3,800.00	15.51	62.54	3,705.92	1,248.08	334.77	644.09	-184.60	0.00	0.00	0.00
3,900.00	15.51	62.54	3,802.28	1,151.72	347.11	667.81	-191.40	0.00	0.00	0.00
4,000.00	15.51	62.54	3,898.64	1,055.36	359.44	691.54	-198.20	0.00	0.00	0.00

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Well:	GOLDENEYE FED 21-10HN	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)
4,100.00	15.51	62.54	3,994.99	959.01	371.77	715.27	-205.00	0.00	0.00	0.00
4,200.00	15.51	62.54	4,091.35	862.65	384.10	738.99	-211.80	0.00	0.00	0.00
4,300.00	15.51	62.54	4,187.71	766.29	396.44	762.72	-218.60	0.00	0.00	0.00
Sussex Sandstone										
4,313.79	15.51	62.54	4,201.00	753.00	398.14	765.99	-219.54	0.00	0.00	0.00
4,400.00	15.51	62.54	4,284.07	669.93	408.77	786.44	-225.40	0.00	0.00	0.00
4,500.00	15.51	62.54	4,380.43	573.57	421.10	810.17	-232.20	0.00	0.00	0.00
4,600.00	15.51	62.54	4,476.79	477.21	433.43	833.90	-239.00	0.00	0.00	0.00
4,700.00	15.51	62.54	4,573.15	380.85	445.76	857.62	-245.80	0.00	0.00	0.00
Shannon Sandstone										
4,797.40	15.51	62.54	4,667.00	287.00	457.78	880.73	-252.43	0.00	0.00	0.00
4,800.00	15.51	62.54	4,669.50	284.50	458.10	881.35	-252.60	0.00	0.00	0.00
4,900.00	15.51	62.54	4,765.86	188.14	470.43	905.08	-259.40	0.00	0.00	0.00
5,000.00	15.51	62.54	4,862.22	91.78	482.76	928.80	-266.20	0.00	0.00	0.00
END OF TANGENT										
5,021.56	15.51	62.54	4,883.00	71.00	485.42	933.92	-267.67	0.00	0.00	0.00
5,100.00	13.94	62.54	4,958.86	-4.86	494.61	951.61	-272.74	2.00	-2.00	0.00
5,200.00	11.94	62.54	5,056.31	-102.31	504.94	971.48	-278.43	2.00	-2.00	0.00
5,300.00	9.94	62.54	5,154.49	-200.49	513.69	988.32	-283.26	2.00	-2.00	0.00
5,400.00	7.94	62.54	5,253.27	-299.27	520.86	1,002.11	-287.21	2.00	-2.00	0.00
5,500.00	5.94	62.54	5,352.53	-398.53	526.43	1,012.83	-290.29	2.00	-2.00	0.00
5,600.00	3.94	62.54	5,452.16	-498.16	530.41	1,020.47	-292.48	2.00	-2.00	0.00
TeePee Buttes										
5,634.91	3.24	62.54	5,487.00	-533.00	531.41	1,022.41	-293.03	2.00	-2.00	0.00
5,700.00	1.94	62.54	5,552.02	-598.02	532.77	1,025.02	-293.78	2.00	-2.00	0.00
EOD TO VERTICAL										
5,797.04	0.00	0.00	5,649.04	-695.04	533.53	1,026.48	-294.20	2.00	-2.00	0.00
5,800.00	0.00	0.00	5,652.00	-698.00	533.53	1,026.48	-294.20	0.00	0.00	0.00
KOP (10°/100ft BUR)										
5,897.04	0.00	0.00	5,749.04	-795.04	533.53	1,026.48	-294.20	0.00	0.00	0.00
5,900.00	0.30	181.12	5,752.00	-798.00	533.52	1,026.48	-294.19	10.00	10.00	0.00
6,000.00	10.30	181.12	5,851.45	-897.45	524.31	1,026.30	-285.24	10.00	10.00	0.00
6,100.00	20.30	181.12	5,947.78	-993.78	497.96	1,025.78	-259.66	10.00	10.00	0.00
6,200.00	30.30	181.12	6,038.08	-1,084.08	455.30	1,024.95	-218.22	10.00	10.00	0.00
6,300.00	40.30	181.12	6,119.59	-1,165.59	397.60	1,023.82	-162.20	10.00	10.00	0.00
Sharon Springs										
6,330.06	43.30	181.12	6,142.00	-1,188.00	377.57	1,023.43	-142.75	10.00	10.00	0.00
Niobrara Top										
6,390.93	49.39	181.12	6,184.00	-1,230.00	333.56	1,022.57	-100.01	10.00	10.00	0.00
6,400.00	50.30	181.12	6,189.85	-1,235.85	326.63	1,022.43	-93.28	10.00	10.00	0.00
Niobrara A Chalk										
6,436.06	53.90	181.12	6,212.00	-1,258.00	298.18	1,021.88	-65.65	10.00	10.00	0.00
Niobrara A Chalk Base										
6,488.67	59.16	181.12	6,241.00	-1,287.00	254.32	1,021.02	-23.06	10.00	10.00	0.00
6,500.00	60.30	181.12	6,246.71	-1,292.71	244.54	1,020.83	-13.56	10.00	10.00	0.00
Niobrara B1 Chalk Top										
6,568.45	67.14	181.12	6,277.00	-1,323.00	183.22	1,019.63	45.99	10.00	10.00	0.00
6,600.00	70.30	181.12	6,288.45	-1,334.45	153.82	1,019.06	74.54	10.00	10.00	0.00
Niobrara B1 Chalk Base										
6,604.65	70.76	181.12	6,290.00	-1,336.00	149.44	1,018.97	78.79	10.00	10.00	0.00
6,700.00	80.30	181.12	6,313.80	-1,359.80	57.24	1,017.17	168.33	10.00	10.00	0.00
HZ LP: 600ft FNL & 2085ft FEL of Sec 21 - Niobrara B2 Chalk Top (Target)										

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Planned Survey										
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6,797.04	90.00	181.12	6,322.00	-1,368.00	-39.32	1,015.28	262.10	10.00	10.00	0.00
6,800.00	90.00	181.12	6,322.00	-1,368.00	-42.28	1,015.22	264.97	0.00	0.00	0.00
6,900.00	90.00	181.12	6,322.00	-1,368.00	-142.26	1,013.27	362.06	0.00	0.00	0.00
7,000.00	90.00	181.12	6,322.00	-1,368.00	-242.24	1,011.31	459.16	0.00	0.00	0.00
7,100.00	90.00	181.12	6,322.00	-1,368.00	-342.22	1,009.36	556.25	0.00	0.00	0.00
7,200.00	90.00	181.12	6,322.00	-1,368.00	-442.20	1,007.40	653.34	0.00	0.00	0.00
7,300.00	90.00	181.12	6,322.00	-1,368.00	-542.18	1,005.45	750.43	0.00	0.00	0.00
7,400.00	90.00	181.12	6,322.00	-1,368.00	-642.16	1,003.49	847.52	0.00	0.00	0.00
7,500.00	90.00	181.12	6,322.00	-1,368.00	-742.14	1,001.54	944.62	0.00	0.00	0.00
7,600.00	90.00	181.12	6,322.00	-1,368.00	-842.12	999.59	1,041.71	0.00	0.00	0.00
7,700.00	90.00	181.12	6,322.00	-1,368.00	-942.11	997.63	1,138.80	0.00	0.00	0.00
7,800.00	90.00	181.12	6,322.00	-1,368.00	-1,042.09	995.68	1,235.89	0.00	0.00	0.00
7,900.00	90.00	181.12	6,322.00	-1,368.00	-1,142.07	993.72	1,332.99	0.00	0.00	0.00
8,000.00	90.00	181.12	6,322.00	-1,368.00	-1,242.05	991.77	1,430.08	0.00	0.00	0.00
8,100.00	90.00	181.12	6,322.00	-1,368.00	-1,342.03	989.82	1,527.17	0.00	0.00	0.00
8,200.00	90.00	181.12	6,322.00	-1,368.00	-1,442.01	987.87	1,624.26	0.00	0.00	0.00
8,300.00	90.00	181.12	6,322.00	-1,368.00	-1,541.99	985.91	1,721.36	0.00	0.00	0.00
8,400.00	90.00	181.12	6,322.00	-1,368.00	-1,641.97	983.96	1,818.45	0.00	0.00	0.00
8,500.00	90.00	181.12	6,322.00	-1,368.00	-1,741.95	982.01	1,915.54	0.00	0.00	0.00
8,600.00	90.00	181.12	6,322.00	-1,368.00	-1,841.93	980.06	2,012.63	0.00	0.00	0.00
8,700.00	90.00	181.12	6,322.00	-1,368.00	-1,941.92	978.10	2,109.73	0.00	0.00	0.00
8,800.00	90.00	181.12	6,322.00	-1,368.00	-2,041.90	976.15	2,206.82	0.00	0.00	0.00
8,900.00	90.00	181.12	6,322.00	-1,368.00	-2,141.88	974.20	2,303.91	0.00	0.00	0.00
9,000.00	90.00	181.12	6,322.00	-1,368.00	-2,241.86	972.25	2,401.00	0.00	0.00	0.00
9,100.00	90.00	181.12	6,322.00	-1,368.00	-2,341.84	970.30	2,498.10	0.00	0.00	0.00
9,200.00	90.00	181.12	6,322.00	-1,368.00	-2,441.82	968.35	2,595.19	0.00	0.00	0.00
9,300.00	90.00	181.12	6,322.00	-1,368.00	-2,541.80	966.40	2,692.28	0.00	0.00	0.00
9,400.00	90.00	181.12	6,322.00	-1,368.00	-2,641.78	964.45	2,789.38	0.00	0.00	0.00
9,500.00	90.00	181.12	6,322.00	-1,368.00	-2,741.76	962.50	2,886.47	0.00	0.00	0.00
9,600.00	90.00	181.12	6,322.00	-1,368.00	-2,841.74	960.54	2,983.56	0.00	0.00	0.00
9,700.00	90.00	181.12	6,322.00	-1,368.00	-2,941.72	958.59	3,080.65	0.00	0.00	0.00
9,800.00	90.00	181.12	6,322.00	-1,368.00	-3,041.71	956.64	3,177.75	0.00	0.00	0.00
9,900.00	90.00	181.12	6,322.00	-1,368.00	-3,141.69	954.69	3,274.84	0.00	0.00	0.00
10,000.00	90.00	181.12	6,322.00	-1,368.00	-3,241.67	952.74	3,371.93	0.00	0.00	0.00
10,100.00	90.00	181.12	6,322.00	-1,368.00	-3,341.65	950.79	3,469.03	0.00	0.00	0.00
10,200.00	90.00	181.12	6,322.00	-1,368.00	-3,441.63	948.85	3,566.12	0.00	0.00	0.00
10,300.00	90.00	181.12	6,322.00	-1,368.00	-3,541.61	946.90	3,663.21	0.00	0.00	0.00
10,400.00	90.00	181.12	6,322.00	-1,368.00	-3,641.59	944.95	3,760.31	0.00	0.00	0.00
10,500.00	90.00	181.12	6,322.00	-1,368.00	-3,741.57	943.00	3,857.40	0.00	0.00	0.00
10,600.00	90.00	181.12	6,322.00	-1,368.00	-3,841.55	941.05	3,954.49	0.00	0.00	0.00
10,700.00	90.00	181.12	6,322.00	-1,368.00	-3,941.53	939.10	4,051.59	0.00	0.00	0.00
10,800.00	90.00	181.12	6,322.00	-1,368.00	-4,041.52	937.15	4,148.68	0.00	0.00	0.00
BHL: 600ft FSL & 2085ft FEL of Sec 21										
10,897.96	90.00	181.12	6,322.00	-1,368.00	-4,139.46	935.24	4,243.79	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well GOLDENEYE FED 21-10HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4954.00usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4954.00usft (Original Well Elev)
Site:	NE NW SEC. 21 T8N R60W 6th P.M.	North Reference:	True
Well:	GOLDENEYE FED 21-10HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Formations						
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
528.00	528.00	Fox Hills Base				
1,574.02	1,561.00	Pierre Shale Top				
3,448.27	3,367.00	Richard Sandstone				
3,563.47	3,478.00	Parkman Sandstone				
4,313.79	4,201.00	Sussex Sandstone				
4,797.40	4,667.00	Shannon Sandstone				
5,634.91	5,487.00	TeePee Buttes				
6,330.06	6,142.00	Sharon Springs				
6,390.93	6,184.00	Niobrara Top				
6,436.06	6,212.00	Niobrara A Chalk				
6,488.67	6,241.00	Niobrara A Chalk Base				
6,568.45	6,277.00	Niobrara B1 Chalk Top				
6,604.65	6,290.00	Niobrara B1 Chalk Base				
6,797.04	6,322.00	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: 558ft FNL & 2192ft FWL of Sec 21	
700.00	700.00	0.00	0.00	START NUDGE (2°/100ft BUR)	
1,475.48	1,466.04	48.11	92.56	EOB TO 15.51° INC	
5,021.56	4,883.00	485.42	933.92	END OF TANGENT	
5,797.04	5,649.04	533.53	1,026.48	EOD TO VERTICAL	
5,897.04	5,749.04	533.53	1,026.48	KOP (10°/100ft BUR)	
6,797.04	6,322.00	-39.32	1,015.28	HZ LP: 600ft FNL & 2085ft FEL of Sec 21	
10,897.96	6,322.00	-4,139.46	935.24	BHL: 600ft FSL & 2085ft FEL of Sec 21	