

Project: COLORADO NORTHERN ZONE - 83  
Site: WELD\_MORTON 17-12 PAD  
Well: Morton 1-12  
Wellbore: OH  
Section: SECTION 12 T1N R67W  
SHL:  
Design: Morton 1-12(wp01)  
Latitude: 40° 4' 8.303 N  
Longitude: 104° 50' 10.154 W  
GL: 4905.00  
KB: GL 4905 & KB 15 @ 4920.00ft (Original Well Elev)

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
3270.00	3353.54	PARKMAN
4600.00	4747.37	SUSSEX
7140.00	7333.47	NIOBRARA
7480.00	7673.47	CODELL
7565.00	7758.47	GREENHORN
7915.00	8108.47	J-SAND



Azimuths to True North  
Magnetic North: 8.89°  
  
Magnetic Field  
Strength: 52961.0snT  
Dip Angle: 66.77°  
Date: 05/03/2011  
Model: IGRF2010

WELL DETAILS: Morton 1-12

+N/-S	+E/-W	Northing	Easting	Ground Level: 4905.00	Latitude	Longitude	Slot
0.00	0.00	1268667.41	3185789.01		40° 4' 8.303 N	104° 50' 10.154 W	

CASING DETAILS

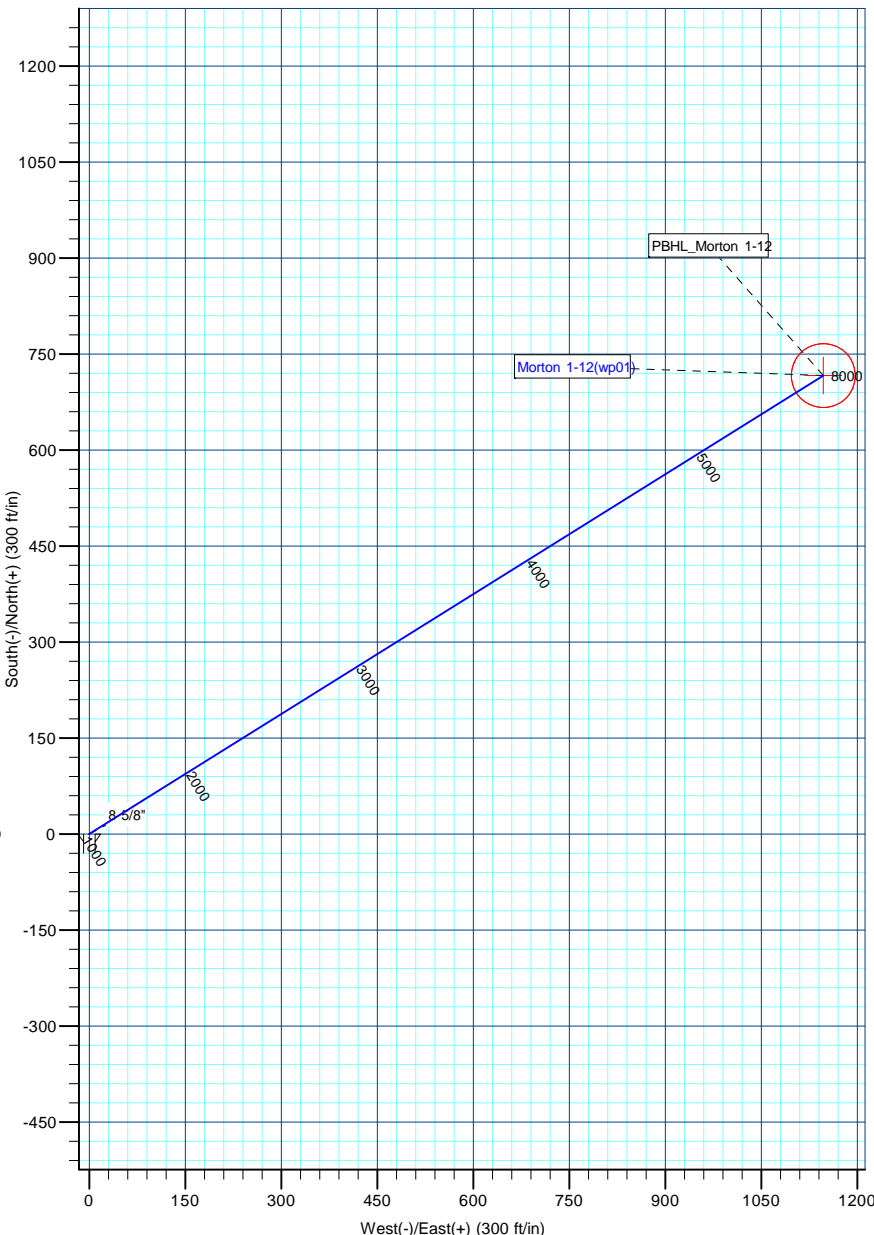
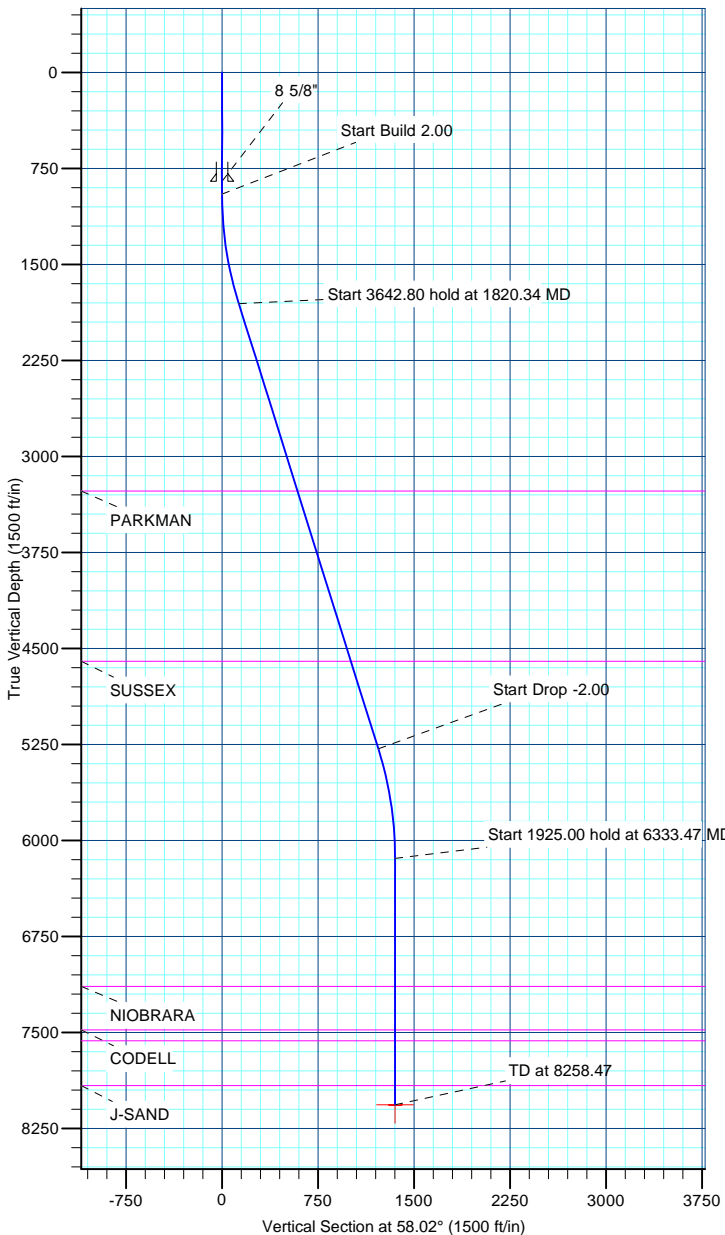
TVD	MD	Name	Size
850.00	850.00	8 5/8"	8.625

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL_Morton 1-12	8065.00	716.21	1146.88	1269392.18	3186930.49	40° 4' 15.380 N	104° 49' 55.402 W	Circle (Radius: 50.00)

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
950.00	0.00	0.00	950.00	0.00	0.00	0.00	0.00	0.00
1820.34	17.41	58.02	1807.01	69.49	111.28	2.00	58.02	131.19
5463.14	17.41	58.02	5282.99	646.72	1035.60	0.00	0.00	1220.95
6333.47	0.00	0.00	6140.00	716.21	1146.88	2.00	180.00	1352.14
8258.47	0.00	0.00	8065.00	716.21	1146.88	0.00	0.00	1352.14



# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83**

**WELD\_MORTON 17-12 PAD**

**Morton 1-12**

**OH**

**Plan: Morton 1-12(wp01)**

## **Standard Planning Report**

**03 May, 2011**

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well Morton 1-12
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 4905 & KB 15 @ 4920.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 4905 & KB 15 @ 4920.00ft (Original Well Elev)
<b>Site:</b>	WELD_MORTON 17-12 PAD	<b>North Reference:</b>	True
<b>Well:</b>	Morton 1-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Morton 1-12(wp01)		

<b>Project</b>	COLORADO NORTHERN ZONE - 83, KERR MCGEE OIL & GAS ONSHORE LP		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

Site		WELD_MORTON 17-12 PAD, SECTION 12 T1N R67W			
Site Position:		Northing:	1,268,647.39 usft	Latitude:	40° 4' 8.105 N
From:	Lat/Long	Easting:	3,185,790.28 usft	Longitude:	104° 50' 10.140 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.43 °

Well	Morton 1-12, 1372' FNL 1763' FEL					
Well Position	+N/-S	20.02 ft	Northing:	1,268,667.40 usft	Latitude:	40° 4' 8.303 N
	+E/-W	-1.12 ft	Easting:	3,185,789.01 usft	Longitude:	104° 50' 10.154 W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,905.00 ft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	05/03/2011	8.89	66.77	52,961

<b>Design</b>	Morton 1-12(wp01)			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	58.02

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
950.00	0.00	0.00	950.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,820.34	17.41	58.02	1,807.01	69.49	111.28	2.00	2.00	0.00	58.02	
5,463.14	17.41	58.02	5,282.99	646.72	1,035.60	0.00	0.00	0.00	0.00	
6,333.47	0.00	0.00	6,140.00	716.21	1,146.88	2.00	-2.00	0.00	180.00	
8,258.47	0.00	0.00	8,065.00	716.21	1,146.88	0.00	0.00	0.00	0.00	PBHL_Morton 1-12

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well Morton 1-12
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 4905 & KB 15 @ 4920.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 4905 & KB 15 @ 4920.00ft (Original Well Elev)
<b>Site:</b>	WELD_MORTON 17-12 PAD	<b>North Reference:</b>	True
<b>Well:</b>	Morton 1-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Morton 1-12(wp01)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
850.00	0.00	0.00	850.00	0.00	0.00	0.00	0.00	0.00	0.00
8 5/8"									
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
950.00	0.00	0.00	950.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,000.00	1.00	58.02	1,000.00	0.23	0.37	0.44	2.00	2.00	0.00
1,100.00	3.00	58.02	1,099.93	2.08	3.33	3.93	2.00	2.00	0.00
1,200.00	5.00	58.02	1,199.68	5.77	9.25	10.90	2.00	2.00	0.00
1,300.00	7.00	58.02	1,299.13	11.31	18.11	21.35	2.00	2.00	0.00
1,400.00	9.00	58.02	1,398.15	18.68	29.92	35.27	2.00	2.00	0.00
1,500.00	11.00	58.02	1,496.63	27.88	44.64	52.63	2.00	2.00	0.00
1,600.00	13.00	58.02	1,594.44	38.89	62.28	73.42	2.00	2.00	0.00
1,700.00	15.00	58.02	1,691.46	51.71	82.80	97.62	2.00	2.00	0.00
1,800.00	17.00	58.02	1,787.58	66.30	106.17	125.18	2.00	2.00	0.00
1,820.34	17.41	58.02	1,807.01	69.49	111.28	131.19	2.00	2.00	0.00
Start 3642.80 hold at 1820.34 MD									
1,900.00	17.41	58.02	1,883.03	82.11	131.49	155.02	0.00	0.00	0.00
2,000.00	17.41	58.02	1,978.45	97.96	156.86	184.94	0.00	0.00	0.00
2,100.00	17.41	58.02	2,073.87	113.81	182.24	214.85	0.00	0.00	0.00
2,200.00	17.41	58.02	2,169.29	129.65	207.61	244.77	0.00	0.00	0.00
2,300.00	17.41	58.02	2,264.71	145.50	232.99	274.69	0.00	0.00	0.00
2,400.00	17.41	58.02	2,360.13	161.34	258.36	304.60	0.00	0.00	0.00
2,500.00	17.41	58.02	2,455.55	177.19	283.73	334.52	0.00	0.00	0.00
2,600.00	17.41	58.02	2,550.97	193.03	309.11	364.43	0.00	0.00	0.00
2,700.00	17.41	58.02	2,646.39	208.88	334.48	394.35	0.00	0.00	0.00
2,800.00	17.41	58.02	2,741.81	224.73	359.86	424.26	0.00	0.00	0.00
2,900.00	17.41	58.02	2,837.23	240.57	385.23	454.18	0.00	0.00	0.00
3,000.00	17.41	58.02	2,932.65	256.42	410.60	484.09	0.00	0.00	0.00
3,100.00	17.41	58.02	3,028.07	272.26	435.98	514.01	0.00	0.00	0.00
3,200.00	17.41	58.02	3,123.49	288.11	461.35	543.92	0.00	0.00	0.00
3,300.00	17.41	58.02	3,218.91	303.95	486.73	573.84	0.00	0.00	0.00
3,353.54	17.41	58.02	3,270.00	312.44	500.31	589.85	0.00	0.00	0.00
PARKMAN									
3,400.00	17.41	58.02	3,314.33	319.80	512.10	603.75	0.00	0.00	0.00
3,500.00	17.41	58.02	3,409.75	335.64	537.47	633.67	0.00	0.00	0.00
3,600.00	17.41	58.02	3,505.17	351.49	562.85	663.58	0.00	0.00	0.00
3,700.00	17.41	58.02	3,600.59	367.34	588.22	693.50	0.00	0.00	0.00
3,800.00	17.41	58.02	3,696.02	383.18	613.60	723.41	0.00	0.00	0.00
3,900.00	17.41	58.02	3,791.44	399.03	638.97	753.33	0.00	0.00	0.00
4,000.00	17.41	58.02	3,886.86	414.87	664.34	783.25	0.00	0.00	0.00
4,100.00	17.41	58.02	3,982.28	430.72	689.72	813.16	0.00	0.00	0.00
4,200.00	17.41	58.02	4,077.70	446.56	715.09	843.08	0.00	0.00	0.00
4,300.00	17.41	58.02	4,173.12	462.41	740.47	872.99	0.00	0.00	0.00

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<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 4905 & KB 15 @ 4920.00ft (Original Well Elev)
<b>Site:</b>	WELD_MORTON 17-12 PAD	<b>North Reference:</b>	True
<b>Well:</b>	Morton 1-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Morton 1-12(wp01)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,400.00	17.41	58.02	4,268.54	478.26	765.84	902.91	0.00	0.00	0.00
4,500.00	17.41	58.02	4,363.96	494.10	791.21	932.82	0.00	0.00	0.00
4,600.00	17.41	58.02	4,459.38	509.95	816.59	962.74	0.00	0.00	0.00
4,700.00	17.41	58.02	4,554.80	525.79	841.96	992.65	0.00	0.00	0.00
4,747.37	17.41	58.02	4,600.00	533.30	853.98	1,006.82	0.00	0.00	0.00
<b>SUSSEX</b>									
4,800.00	17.41	58.02	4,650.22	541.64	867.34	1,022.57	0.00	0.00	0.00
4,900.00	17.41	58.02	4,745.64	557.48	892.71	1,052.48	0.00	0.00	0.00
5,000.00	17.41	58.02	4,841.06	573.33	918.08	1,082.40	0.00	0.00	0.00
5,100.00	17.41	58.02	4,936.48	589.18	943.46	1,112.31	0.00	0.00	0.00
5,200.00	17.41	58.02	5,031.90	605.02	968.83	1,142.23	0.00	0.00	0.00
5,300.00	17.41	58.02	5,127.32	620.87	994.21	1,172.14	0.00	0.00	0.00
5,400.00	17.41	58.02	5,222.74	636.71	1,019.58	1,202.06	0.00	0.00	0.00
5,463.14	17.41	58.02	5,282.99	646.72	1,035.60	1,220.95	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
5,500.00	16.67	58.02	5,318.23	652.44	1,044.76	1,231.75	2.00	-2.00	0.00
5,600.00	14.67	58.02	5,414.51	666.74	1,067.67	1,258.76	2.00	-2.00	0.00
5,700.00	12.67	58.02	5,511.68	679.26	1,087.71	1,282.39	2.00	-2.00	0.00
5,800.00	10.67	58.02	5,609.60	689.97	1,104.87	1,302.61	2.00	-2.00	0.00
5,900.00	8.67	58.02	5,708.18	698.87	1,119.11	1,319.41	2.00	-2.00	0.00
6,000.00	6.67	58.02	5,807.28	705.94	1,130.43	1,332.75	2.00	-2.00	0.00
6,100.00	4.67	58.02	5,906.78	711.17	1,138.81	1,342.63	2.00	-2.00	0.00
6,200.00	2.67	58.02	6,006.57	714.56	1,144.24	1,349.03	2.00	-2.00	0.00
6,300.00	0.67	58.02	6,106.53	716.10	1,146.71	1,351.94	2.00	-2.00	0.00
6,333.47	0.00	0.00	6,140.00	716.21	1,146.88	1,352.14	2.00	-2.00	-173.31
<b>Start 1925.00 hold at 6333.47 MD</b>									
6,400.00	0.00	0.00	6,206.53	716.21	1,146.88	1,352.14	0.00	0.00	0.00
6,500.00	0.00	0.00	6,306.53	716.21	1,146.88	1,352.14	0.00	0.00	0.00
6,600.00	0.00	0.00	6,406.53	716.21	1,146.88	1,352.14	0.00	0.00	0.00
6,700.00	0.00	0.00	6,506.53	716.21	1,146.88	1,352.14	0.00	0.00	0.00
6,800.00	0.00	0.00	6,606.53	716.21	1,146.88	1,352.14	0.00	0.00	0.00
6,900.00	0.00	0.00	6,706.53	716.21	1,146.88	1,352.14	0.00	0.00	0.00
7,000.00	0.00	0.00	6,806.53	716.21	1,146.88	1,352.14	0.00	0.00	0.00
7,100.00	0.00	0.00	6,906.53	716.21	1,146.88	1,352.14	0.00	0.00	0.00
7,200.00	0.00	0.00	7,006.53	716.21	1,146.88	1,352.14	0.00	0.00	0.00
7,300.00	0.00	0.00	7,106.53	716.21	1,146.88	1,352.14	0.00	0.00	0.00
7,333.47	0.00	0.00	7,140.00	716.21	1,146.88	1,352.14	0.00	0.00	0.00
<b>NIOBRARA</b>									
7,400.00	0.00	0.00	7,206.53	716.21	1,146.88	1,352.14	0.00	0.00	0.00
7,500.00	0.00	0.00	7,306.53	716.21	1,146.88	1,352.14	0.00	0.00	0.00
7,600.00	0.00	0.00	7,406.53	716.21	1,146.88	1,352.14	0.00	0.00	0.00
7,673.47	0.00	0.00	7,480.00	716.21	1,146.88	1,352.14	0.00	0.00	0.00
<b>CODELL</b>									
7,700.00	0.00	0.00	7,506.53	716.21	1,146.88	1,352.14	0.00	0.00	0.00
7,758.47	0.00	0.00	7,565.00	716.21	1,146.88	1,352.14	0.00	0.00	0.00
<b>GREENHORN</b>									
7,800.00	0.00	0.00	7,606.53	716.21	1,146.88	1,352.14	0.00	0.00	0.00
7,900.00	0.00	0.00	7,706.53	716.21	1,146.88	1,352.14	0.00	0.00	0.00
8,000.00	0.00	0.00	7,806.53	716.21	1,146.88	1,352.14	0.00	0.00	0.00
8,100.00	0.00	0.00	7,906.53	716.21	1,146.88	1,352.14	0.00	0.00	0.00
8,108.47	0.00	0.00	7,915.00	716.21	1,146.88	1,352.14	0.00	0.00	0.00

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<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 4905 & KB 15 @ 4920.00ft (Original Well Elev)
<b>Site:</b>	WELD_MORTON 17-12 PAD	<b>North Reference:</b>	True
<b>Well:</b>	Morton 1-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Morton 1-12(wp01)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
<b>J-SAND</b>									
8,200.00	0.00	0.00	8,006.53	716.21	1,146.88	1,352.14	0.00	0.00	0.00
8,258.47	0.00	0.00	8,065.00	716.21	1,146.88	1,352.14	0.00	0.00	0.00
<b>PBHL_Morton 1-12</b>									

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL_Morton 1-12 - plan hits target center - Circle (radius 50.00)	0.00	0.43	8,065.00	716.21	1,146.88	1,269,392.18	3,186,930.49	40° 4' 15.380 N	104° 49' 55.402 W

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name		Casing Diameter (in)	Hole Diameter (in)
850.00	850.00	8 5/8"		8.625	11.000

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,353.54	3,270.00	PARKMAN			
4,747.37	4,600.00	SUSSEX			
7,333.47	7,140.00	NIOBRARA			
7,673.47	7,480.00	CODELL			
7,758.47	7,565.00	GREENHORN			
8,108.47	7,915.00	J-SAND			

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
950.00	950.00	0.00	0.00	Start Build 2.00
1,820.34	1,807.01	69.49	111.28	Start 3642.80 hold at 1820.34 MD
5,463.14	5,282.99	646.72	1,035.60	Start Drop -2.00
6,333.47	6,140.00	716.21	1,146.88	Start 1925.00 hold at 6333.47 MD
8,258.47	8,065.00	716.21	1,146.88	TD at 8258.47