

Project: COLORADO NORTHERN ZONE - 83  
 Site: WELD\_MORTON 17-12 PAD  
 Well: Morton 3-12  
 Wellbore: OH  
 Section: SECTION 12 T1N R67W  
 SHL:  
 Design: Morton 3-12(wp01)  
 Latitude: 40° 4' 8.202 N  
 Longitude: 104° 50' 10.147 W  
 GL: 4905.00  
 KB: GL 4905 & KB 15 @ 4920.00ft (ASSUMED)

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3285.00	3416.40	PARKMAN
4615.00	4856.68	SUSSEX
7155.00	7462.16	NIOBRARA
7495.00	7802.16	CODELL
7580.00	7887.16	GREENHORN
7930.00	8237.16	JSAND



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 3-12

+N/-S	+E/-W	Northing	Easting	Ground Level: 4905.00	Latitude	Longitude	Slot
0.00	0.00	1268657.21	3185789.65		40° 4' 8.202 N	104° 50' 10.147 W	

#### CASING DETAILS

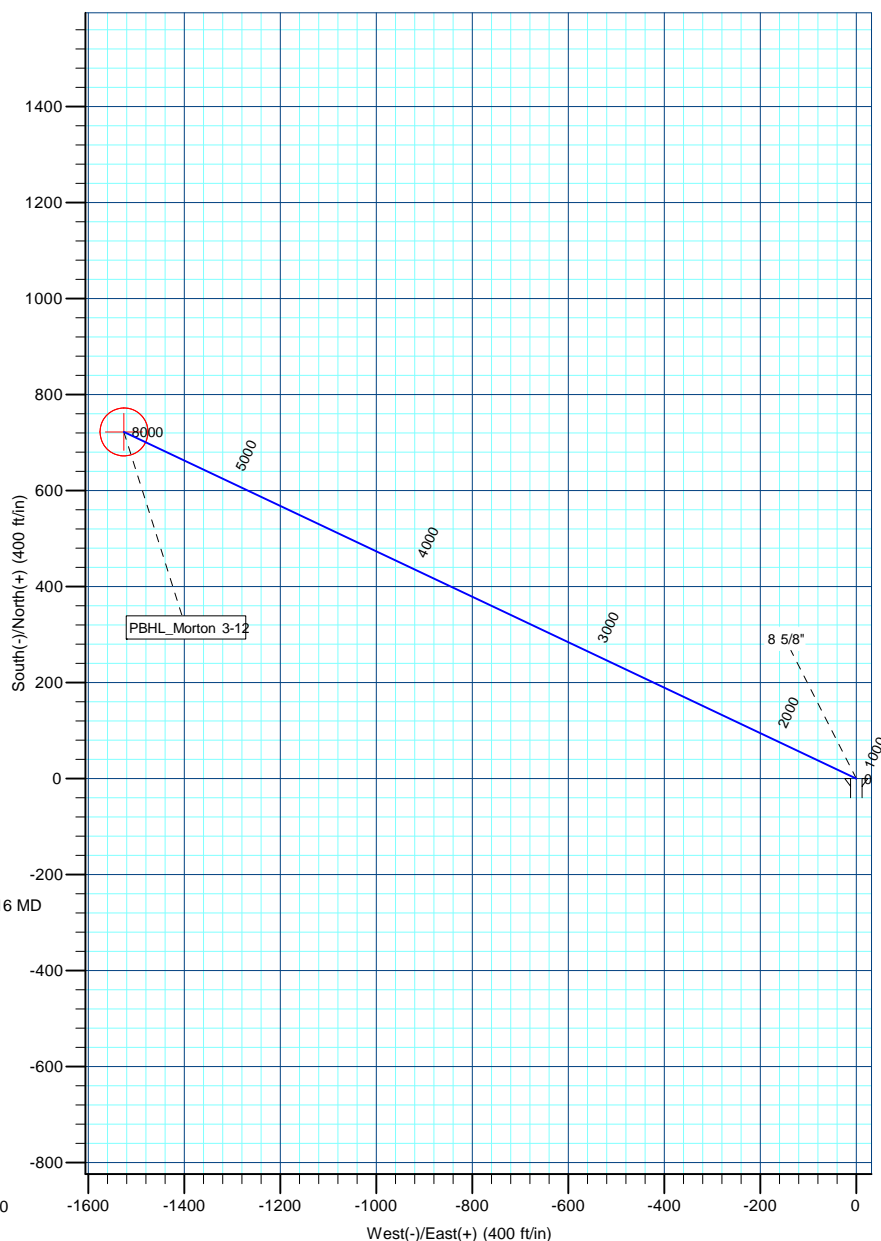
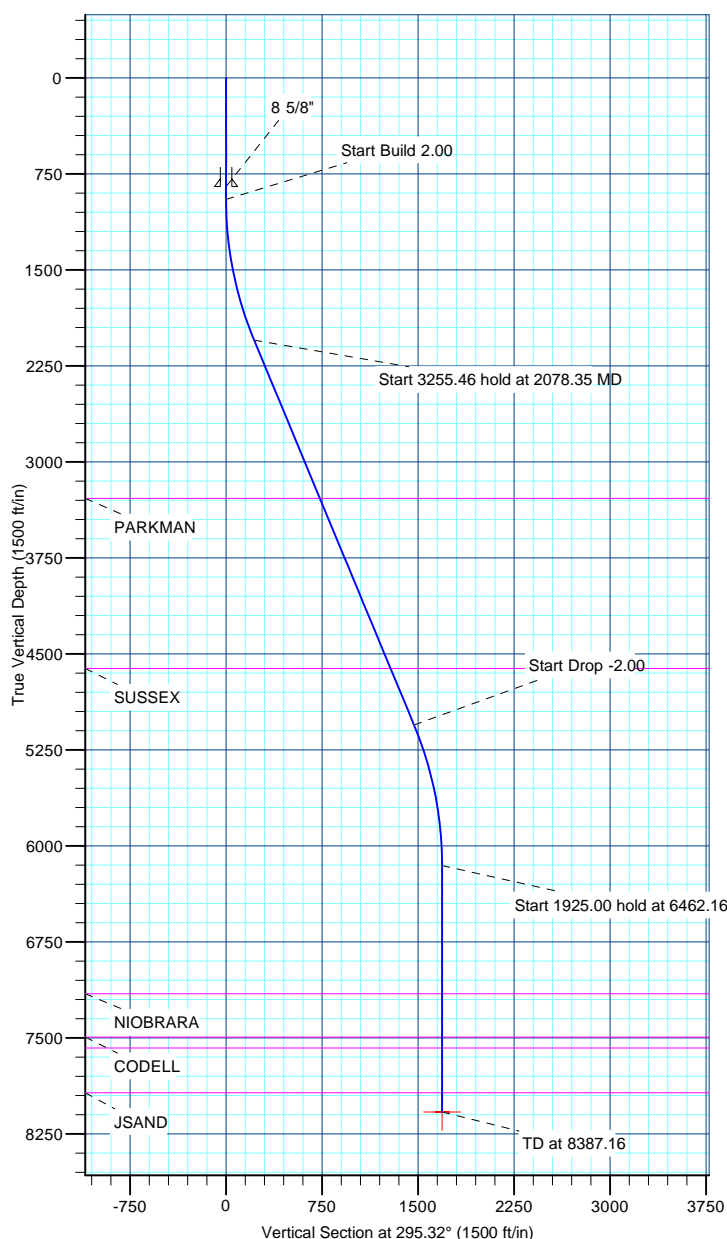
TVD	MD	Name	Size
850.00	850.00	8 5/8"	8.625

#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL_Morton 3-12	8080.00	722.07	-1525.81	1269367.83	3184258.48	40° 4' 15.337 N	104° 50' 29.774 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
2078.35	22.57	295.32	2049.40	93.83	-198.27	2.00	295.32	219.35
5333.81	22.57	295.32	5055.60	628.23	-1327.54	0.00	0.00	1468.68
6462.16	0.00	0.00	6155.00	722.06	-1525.81	2.00	180.00	1688.04
8387.16	0.00	0.00	8080.00	722.06	-1525.81	0.00	0.00	1688.04



# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83**

**WELD\_MORTON 17-12 PAD**

**Morton 3-12**

**OH**

**Plan: Morton 3-12(wp01)**

## **Standard Planning Report**

**03 May, 2011**

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well Morton 3-12
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 4905 & KB 15 @ 4920.00ft (ASSUMED)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 4905 & KB 15 @ 4920.00ft (ASSUMED)
<b>Site:</b>	WELD_MORTON 17-12 PAD	<b>North Reference:</b>	True
<b>Well:</b>	Morton 3-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Morton 3-12(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		

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

<b>Well</b>	Morton 3-12, 1382 FNL 1761 FEL			
<b>Well Position</b>	<b>+N/-S</b>	9.81 ft	<b>Northing:</b>	1,268,657.20 usft
	<b>+E/-W</b>	-0.56 ft	<b>Easting:</b>	3,185,789.65 usft
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	<b>Ground Level:</b> 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 3-12(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	295.32

<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	
2,078.35	22.57	295.32	2,049.40	93.83	-198.27	2.00	2.00	0.00	295.32	
5,333.81	22.57	295.32	5,055.60	628.23	-1,327.54	0.00	0.00	0.00	0.00	
6,462.16	0.00	0.00	6,155.00	722.06	-1,525.81	2.00	-2.00	0.00	180.00	
8,387.16	0.00	0.00	8,080.00	722.06	-1,525.81	0.00	0.00	0.00	0.00	PBHL_Morton 3-12

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well Morton 3-12
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 4905 & KB 15 @ 4920.00ft (ASSUMED)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 4905 & KB 15 @ 4920.00ft (ASSUMED)
<b>Site:</b>	WELD_MORTON 17-12 PAD	<b>North Reference:</b>	True
<b>Well:</b>	Morton 3-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Morton 3-12(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	295.32	1,000.00	0.19	-0.39	0.44	2.00	2.00	0.00
1,100.00	3.00	295.32	1,099.93	1.68	-3.55	3.93	2.00	2.00	0.00
1,200.00	5.00	295.32	1,199.68	4.66	-9.85	10.90	2.00	2.00	0.00
1,300.00	7.00	295.32	1,299.13	9.13	-19.30	21.35	2.00	2.00	0.00
1,400.00	9.00	295.32	1,398.15	15.09	-31.88	35.27	2.00	2.00	0.00
1,500.00	11.00	295.32	1,496.63	22.51	-47.58	52.63	2.00	2.00	0.00
1,600.00	13.00	295.32	1,594.44	31.41	-66.37	73.42	2.00	2.00	0.00
1,700.00	15.00	295.32	1,691.46	41.75	-88.23	97.62	2.00	2.00	0.00
1,800.00	17.00	295.32	1,787.58	53.54	-113.15	125.18	2.00	2.00	0.00
1,900.00	19.00	295.32	1,882.68	66.76	-141.08	156.08	2.00	2.00	0.00
2,000.00	21.00	295.32	1,976.65	81.39	-171.99	190.28	2.00	2.00	0.00
2,078.35	22.57	295.32	2,049.40	93.83	-198.27	219.35	2.00	2.00	0.00
Start 3255.46 hold at 2078.35 MD									
2,100.00	22.57	295.32	2,069.39	97.38	-205.78	227.66	0.00	0.00	0.00
2,200.00	22.57	295.32	2,161.74	113.80	-240.47	266.04	0.00	0.00	0.00
2,300.00	22.57	295.32	2,254.08	130.21	-275.16	304.41	0.00	0.00	0.00
2,400.00	22.57	295.32	2,346.42	146.63	-309.85	342.79	0.00	0.00	0.00
2,500.00	22.57	295.32	2,438.77	163.04	-344.54	381.17	0.00	0.00	0.00
2,600.00	22.57	295.32	2,531.11	179.46	-379.22	419.54	0.00	0.00	0.00
2,700.00	22.57	295.32	2,623.45	195.88	-413.91	457.92	0.00	0.00	0.00
2,800.00	22.57	295.32	2,715.80	212.29	-448.60	496.30	0.00	0.00	0.00
2,900.00	22.57	295.32	2,808.14	228.71	-483.29	534.67	0.00	0.00	0.00
3,000.00	22.57	295.32	2,900.48	245.12	-517.98	573.05	0.00	0.00	0.00
3,100.00	22.57	295.32	2,992.82	261.54	-552.67	611.43	0.00	0.00	0.00
3,200.00	22.57	295.32	3,085.17	277.95	-587.35	649.80	0.00	0.00	0.00
3,300.00	22.57	295.32	3,177.51	294.37	-622.04	688.18	0.00	0.00	0.00
3,400.00	22.57	295.32	3,269.85	310.78	-656.73	726.56	0.00	0.00	0.00
3,416.40	22.57	295.32	3,285.00	313.48	-662.42	732.85	0.00	0.00	0.00
PARKMAN									
3,500.00	22.57	295.32	3,362.20	327.20	-691.42	764.93	0.00	0.00	0.00
3,600.00	22.57	295.32	3,454.54	343.61	-726.11	803.31	0.00	0.00	0.00
3,700.00	22.57	295.32	3,546.88	360.03	-760.80	841.68	0.00	0.00	0.00
3,800.00	22.57	295.32	3,639.23	376.45	-795.48	880.06	0.00	0.00	0.00
3,900.00	22.57	295.32	3,731.57	392.86	-830.17	918.44	0.00	0.00	0.00
4,000.00	22.57	295.32	3,823.91	409.28	-864.86	956.81	0.00	0.00	0.00
4,100.00	22.57	295.32	3,916.26	425.69	-899.55	995.19	0.00	0.00	0.00
4,200.00	22.57	295.32	4,008.60	442.11	-934.24	1,033.57	0.00	0.00	0.00
4,300.00	22.57	295.32	4,100.94	458.52	-968.93	1,071.94	0.00	0.00	0.00
4,400.00	22.57	295.32	4,193.29	474.94	-1,003.61	1,110.32	0.00	0.00	0.00
4,500.00	22.57	295.32	4,285.63	491.35	-1,038.30	1,148.70	0.00	0.00	0.00

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<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL 4905 & KB 15 @ 4920.00ft (ASSUMED)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL 4905 & KB 15 @ 4920.00ft (ASSUMED)
<b>Site:</b>	WELD_MORTON 17-12 PAD	<b>North Reference:</b>	True
<b>Well:</b>	Morton 3-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Morton 3-12(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)
4,600.00	22.57	295.32	4,377.97	507.77	-1,072.99	1,187.07	0.00	0.00	0.00
4,700.00	22.57	295.32	4,470.31	524.19	-1,107.68	1,225.45	0.00	0.00	0.00
4,800.00	22.57	295.32	4,562.66	540.60	-1,142.37	1,263.83	0.00	0.00	0.00
4,856.68	22.57	295.32	4,615.00	549.91	-1,162.03	1,285.58	0.00	0.00	0.00
<b>SUSSEX</b>									
4,900.00	22.57	295.32	4,655.00	557.02	-1,177.06	1,302.20	0.00	0.00	0.00
5,000.00	22.57	295.32	4,747.34	573.43	-1,211.74	1,340.58	0.00	0.00	0.00
5,100.00	22.57	295.32	4,839.69	589.85	-1,246.43	1,378.95	0.00	0.00	0.00
5,200.00	22.57	295.32	4,932.03	606.26	-1,281.12	1,417.33	0.00	0.00	0.00
5,300.00	22.57	295.32	5,024.37	622.68	-1,315.81	1,455.71	0.00	0.00	0.00
5,333.81	22.57	295.32	5,055.60	628.23	-1,327.54	1,468.68	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
5,400.00	21.24	295.32	5,117.00	638.79	-1,349.86	1,493.38	2.00	-2.00	0.00
5,500.00	19.24	295.32	5,210.82	653.59	-1,381.13	1,527.97	2.00	-2.00	0.00
5,600.00	17.24	295.32	5,305.79	666.98	-1,409.43	1,559.28	2.00	-2.00	0.00
5,700.00	15.24	295.32	5,401.79	678.94	-1,434.71	1,587.25	2.00	-2.00	0.00
5,800.00	13.24	295.32	5,498.72	689.47	-1,456.95	1,611.85	2.00	-2.00	0.00
5,900.00	11.24	295.32	5,596.44	698.54	-1,476.12	1,633.06	2.00	-2.00	0.00
6,000.00	9.24	295.32	5,694.84	706.15	-1,492.19	1,650.84	2.00	-2.00	0.00
6,100.00	7.24	295.32	5,793.80	712.28	-1,505.15	1,665.18	2.00	-2.00	0.00
6,200.00	5.24	295.32	5,893.20	716.93	-1,514.98	1,676.05	2.00	-2.00	0.00
6,300.00	3.24	295.32	5,992.92	720.09	-1,521.66	1,683.45	2.00	-2.00	0.00
6,400.00	1.24	295.32	6,092.84	721.77	-1,525.20	1,687.36	2.00	-2.00	0.00
6,462.16	0.00	0.00	6,155.00	722.06	-1,525.81	1,688.04	2.00	-2.00	104.04
<b>Start 1925.00 hold at 6462.16 MD</b>									
6,500.00	0.00	0.00	6,192.84	722.06	-1,525.81	1,688.04	0.00	0.00	0.00
6,600.00	0.00	0.00	6,292.84	722.06	-1,525.81	1,688.04	0.00	0.00	0.00
6,700.00	0.00	0.00	6,392.84	722.06	-1,525.81	1,688.04	0.00	0.00	0.00
6,800.00	0.00	0.00	6,492.84	722.06	-1,525.81	1,688.04	0.00	0.00	0.00
6,900.00	0.00	0.00	6,592.84	722.06	-1,525.81	1,688.04	0.00	0.00	0.00
7,000.00	0.00	0.00	6,692.84	722.06	-1,525.81	1,688.04	0.00	0.00	0.00
7,100.00	0.00	0.00	6,792.84	722.06	-1,525.81	1,688.04	0.00	0.00	0.00
7,200.00	0.00	0.00	6,892.84	722.06	-1,525.81	1,688.04	0.00	0.00	0.00
7,300.00	0.00	0.00	6,992.84	722.06	-1,525.81	1,688.04	0.00	0.00	0.00
7,400.00	0.00	0.00	7,092.84	722.06	-1,525.81	1,688.04	0.00	0.00	0.00
7,462.16	0.00	0.00	7,155.00	722.06	-1,525.81	1,688.04	0.00	0.00	0.00
<b>NIOBRARA</b>									
7,500.00	0.00	0.00	7,192.84	722.06	-1,525.81	1,688.04	0.00	0.00	0.00
7,600.00	0.00	0.00	7,292.84	722.06	-1,525.81	1,688.04	0.00	0.00	0.00
7,700.00	0.00	0.00	7,392.84	722.06	-1,525.81	1,688.04	0.00	0.00	0.00
7,800.00	0.00	0.00	7,492.84	722.06	-1,525.81	1,688.04	0.00	0.00	0.00
7,802.16	0.00	0.00	7,495.00	722.06	-1,525.81	1,688.04	0.00	0.00	0.00
<b>CODELL</b>									
7,887.16	0.00	0.00	7,580.00	722.06	-1,525.81	1,688.04	0.00	0.00	0.00
<b>GREENHORN</b>									
7,900.00	0.00	0.00	7,592.84	722.06	-1,525.81	1,688.04	0.00	0.00	0.00
8,000.00	0.00	0.00	7,692.84	722.06	-1,525.81	1,688.04	0.00	0.00	0.00
8,100.00	0.00	0.00	7,792.84	722.06	-1,525.81	1,688.04	0.00	0.00	0.00
8,200.00	0.00	0.00	7,892.84	722.06	-1,525.81	1,688.04	0.00	0.00	0.00
8,237.16	0.00	0.00	7,930.00	722.06	-1,525.81	1,688.04	0.00	0.00	0.00
<b>JSAND</b>									
8,300.00	0.00	0.00	7,992.84	722.06	-1,525.81	1,688.04	0.00	0.00	0.00
8,387.16	0.00	0.00	8,080.00	722.06	-1,525.81	1,688.04	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 (ASSUMED)
<b>Site:</b>	WELD_MORTON 17-12 PAD	<b>North Reference:</b>	True
<b>Well:</b>	Morton 3-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Morton 3-12(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)
PBHL_Morton 3-12									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL_Morton 3-12	0.00	0.43	8,080.00	722.07	-1,525.81	1,269,367.83	3,184,258.48	40° 4' 15.337 N	104° 50' 29.774 W
- plan misses target center by 0.01ft at 8387.16ft MD (8080.00 TVD, 722.06 N, -1525.81 E)									
- Circle (radius 50.00)									

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 (°)	
3,416.40	3,285.00	PARKMAN				
4,856.68	4,615.00	SUSSEX				
7,462.16	7,155.00	NIOBRARA				
7,802.16	7,495.00	CODELL				
7,887.16	7,580.00	GREENHORN				
8,237.16	7,930.00	JSAND		0.00		

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	
2,078.35	2,049.40	93.83	-198.27	Start 3255.46 hold at 2078.35 MD	
5,333.81	5,055.60	628.23	-1,327.54	Start Drop -2.00	
6,462.16	6,155.00	722.06	-1,525.81	Start 1925.00 hold at 6462.16 MD	
8,387.16	8,080.00	722.06	-1,525.81	TD at 8387.16	