

Project: COLORADO NORTHERN ZONE - 83  
 Site: WELD\_MORTON 17-12 PAD  
 Well: Morton 21-12  
 Wellbore: OH  
 Section: SECTION 12 T1N R67W  
 SHL:  
 Design: Morton 21-12(wp01)  
 Latitude: 40° 4' 8.004 N  
 Longitude: 104° 50' 10.136 W  
 GL: 4905.00  
 KB: GL 4905 & KB 15 @ 4920.00ft (ASSUMED)

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3285.00	3325.33	PARKMAN
4615.00	4682.84	SUSSEX
7155.00	7246.11	NIOBRARA
7495.00	7586.11	CODELL
7580.00	7671.11	GREENHORN
7930.00	8021.11	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 21-12

+N/-S	+E/-W	Northing	Easting	Ground Level: 4905.00	Latitude	Longitude	Slot
0.00	0.00	1268637.17	3185790.64		40° 4' 8.004 N	104° 50' 10.136 W	

#### CASING DETAILS

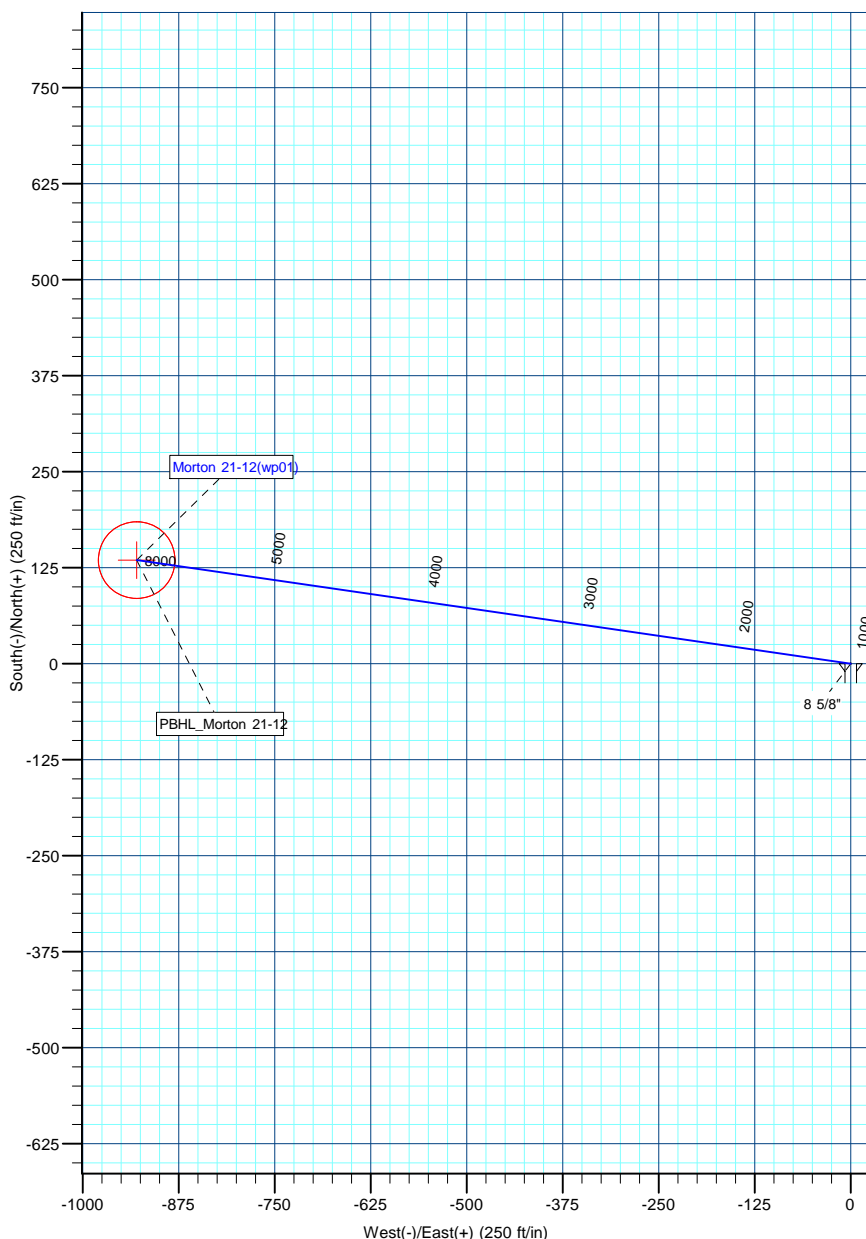
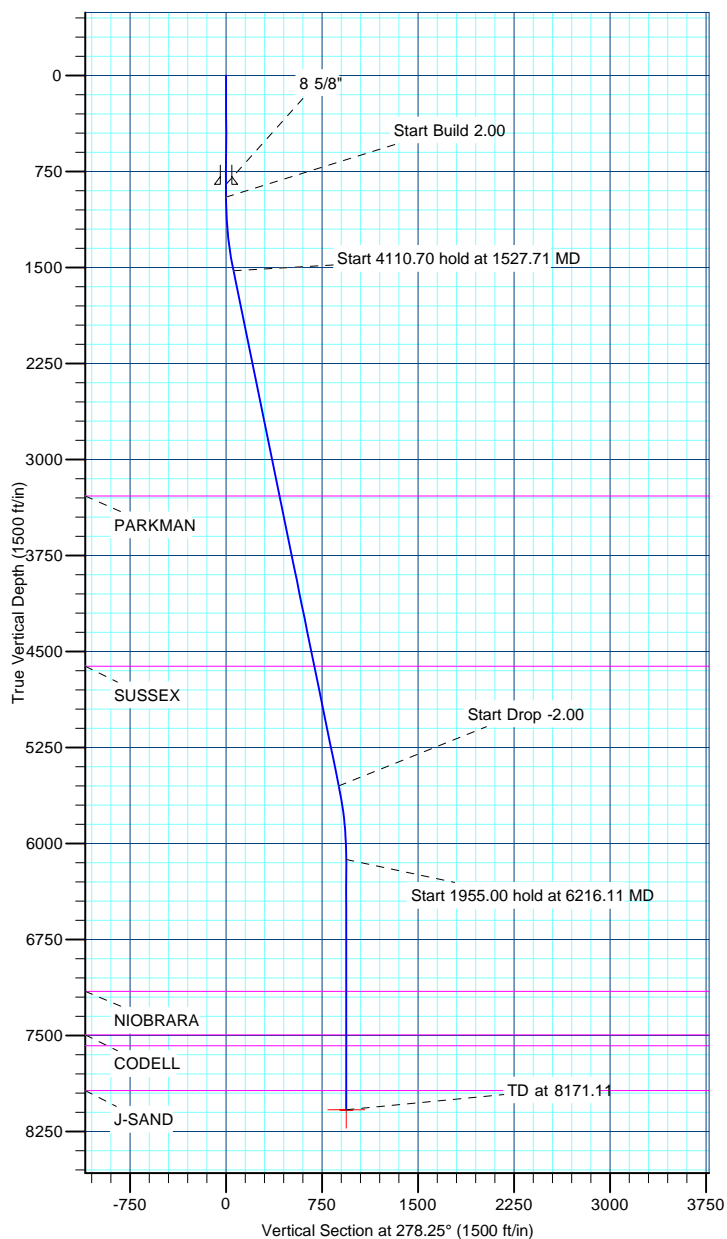
TVD	MD	Name	Size
850.00	850.00	8 5/8"	8.625

#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL_Morton 21-12	8080.00	134.83	-929.73	1268765.03	3184859.93	40° 4' 9.336 N	104° 50' 22.096 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
1527.71	11.55	278.25	1523.80	8.33	-57.45	2.00	278.25	58.05
5638.41	11.55	278.25	5551.20	126.49	-872.28	0.00	0.00	881.40
6216.11	0.00	0.00	6125.00	134.82	-929.73	2.00	180.00	939.45
8171.11	0.00	0.00	8080.00	134.82	-929.73	0.00	0.00	939.45



# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83**

**WELD\_MORTON 17-12 PAD**

**Morton 21-12**

**OH**

**Plan: Morton 21-12(wp01)**

## **Standard Planning Report**

**03 May, 2011**

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well Morton 21-12
<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 21-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Morton 21-12(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 21-12, 1402 FNL 1762' FEL			
<b>Well Position</b>	<b>+N/-S</b>	-10.22 ft	<b>Northing:</b>	1,268,637.17 usft
	<b>+E/-W</b>	0.28 ft	<b>Easting:</b>	3,185,790.64 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 21-12(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	278.25

<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	
1,527.71	11.55	278.25	1,523.80	8.33	-57.45	2.00	2.00	0.00	278.25	
5,638.41	11.55	278.25	5,551.20	126.49	-872.28	0.00	0.00	0.00	0.00	
6,216.11	0.00	0.00	6,125.00	134.82	-929.73	2.00	-2.00	0.00	180.00	
8,171.11	0.00	0.00	8,080.00	134.82	-929.73	0.00	0.00	0.00	0.00	PBHL_Morton 21-12

<b>Database:</b>	EDM5000-RobertS-Local	<b>Local Co-ordinate Reference:</b>	Well Morton 21-12
<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 21-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Morton 21-12(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	278.25	1,000.00	0.06	-0.43	0.44	2.00	2.00	0.00
1,100.00	3.00	278.25	1,099.93	0.56	-3.89	3.93	2.00	2.00	0.00
1,200.00	5.00	278.25	1,199.68	1.56	-10.79	10.90	2.00	2.00	0.00
1,300.00	7.00	278.25	1,299.13	3.06	-21.13	21.35	2.00	2.00	0.00
1,400.00	9.00	278.25	1,398.15	5.06	-34.91	35.27	2.00	2.00	0.00
1,500.00	11.00	278.25	1,496.63	7.55	-52.09	52.63	2.00	2.00	0.00
1,527.71	11.55	278.25	1,523.80	8.33	-57.45	58.05	2.00	2.00	0.00
Start 4110.70 hold at 1527.71 MD									
1,600.00	11.55	278.25	1,594.63	10.41	-71.78	72.53	0.00	0.00	0.00
1,700.00	11.55	278.25	1,692.60	13.28	-91.60	92.56	0.00	0.00	0.00
1,800.00	11.55	278.25	1,790.57	16.16	-111.43	112.59	0.00	0.00	0.00
1,900.00	11.55	278.25	1,888.55	19.03	-131.25	132.62	0.00	0.00	0.00
2,000.00	11.55	278.25	1,986.52	21.91	-151.07	152.65	0.00	0.00	0.00
2,100.00	11.55	278.25	2,084.50	24.78	-170.89	172.68	0.00	0.00	0.00
2,200.00	11.55	278.25	2,182.47	27.66	-190.71	192.71	0.00	0.00	0.00
2,300.00	11.55	278.25	2,280.44	30.53	-210.54	212.74	0.00	0.00	0.00
2,400.00	11.55	278.25	2,378.42	33.40	-230.36	232.77	0.00	0.00	0.00
2,500.00	11.55	278.25	2,476.39	36.28	-250.18	252.80	0.00	0.00	0.00
2,600.00	11.55	278.25	2,574.36	39.15	-270.00	272.83	0.00	0.00	0.00
2,700.00	11.55	278.25	2,672.34	42.03	-289.82	292.86	0.00	0.00	0.00
2,800.00	11.55	278.25	2,770.31	44.90	-309.65	312.88	0.00	0.00	0.00
2,900.00	11.55	278.25	2,868.28	47.78	-329.47	332.91	0.00	0.00	0.00
3,000.00	11.55	278.25	2,966.26	50.65	-349.29	352.94	0.00	0.00	0.00
3,100.00	11.55	278.25	3,064.23	53.53	-369.11	372.97	0.00	0.00	0.00
3,200.00	11.55	278.25	3,162.21	56.40	-388.93	393.00	0.00	0.00	0.00
3,300.00	11.55	278.25	3,260.18	59.27	-408.76	413.03	0.00	0.00	0.00
3,325.33	11.55	278.25	3,285.00	60.00	-413.78	418.11	0.00	0.00	0.00
PARKMAN									
3,400.00	11.55	278.25	3,358.15	62.15	-428.58	433.06	0.00	0.00	0.00
3,500.00	11.55	278.25	3,456.13	65.02	-448.40	453.09	0.00	0.00	0.00
3,600.00	11.55	278.25	3,554.10	67.90	-468.22	473.12	0.00	0.00	0.00
3,700.00	11.55	278.25	3,652.07	70.77	-488.04	493.15	0.00	0.00	0.00
3,800.00	11.55	278.25	3,750.05	73.65	-507.87	513.18	0.00	0.00	0.00
3,900.00	11.55	278.25	3,848.02	76.52	-527.69	533.21	0.00	0.00	0.00
4,000.00	11.55	278.25	3,945.99	79.40	-547.51	553.24	0.00	0.00	0.00
4,100.00	11.55	278.25	4,043.97	82.27	-567.33	573.27	0.00	0.00	0.00
4,200.00	11.55	278.25	4,141.94	85.14	-587.15	593.30	0.00	0.00	0.00
4,300.00	11.55	278.25	4,239.91	88.02	-606.98	613.32	0.00	0.00	0.00
4,400.00	11.55	278.25	4,337.89	90.89	-626.80	633.35	0.00	0.00	0.00
4,500.00	11.55	278.25	4,435.86	93.77	-646.62	653.38	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 21-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Morton 21-12(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	11.55	278.25	4,533.84	96.64	-666.44	673.41	0.00	0.00	0.00
4,682.84	11.55	278.25	4,615.00	99.02	-682.86	690.01	0.00	0.00	0.00
<b>SUSSEX</b>									
4,700.00	11.55	278.25	4,631.81	99.52	-686.26	693.44	0.00	0.00	0.00
4,800.00	11.55	278.25	4,729.78	102.39	-706.09	713.47	0.00	0.00	0.00
4,900.00	11.55	278.25	4,827.76	105.26	-725.91	733.50	0.00	0.00	0.00
5,000.00	11.55	278.25	4,925.73	108.14	-745.73	753.53	0.00	0.00	0.00
5,100.00	11.55	278.25	5,023.70	111.01	-765.55	773.56	0.00	0.00	0.00
5,200.00	11.55	278.25	5,121.68	113.89	-785.37	793.59	0.00	0.00	0.00
5,300.00	11.55	278.25	5,219.65	116.76	-805.20	813.62	0.00	0.00	0.00
5,400.00	11.55	278.25	5,317.62	119.64	-825.02	833.65	0.00	0.00	0.00
5,500.00	11.55	278.25	5,415.60	122.51	-844.84	853.68	0.00	0.00	0.00
5,600.00	11.55	278.25	5,513.57	125.39	-864.66	873.71	0.00	0.00	0.00
5,638.41	11.55	278.25	5,551.20	126.49	-872.28	881.40	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
5,700.00	10.32	278.25	5,611.67	128.17	-883.84	893.09	2.00	-2.00	0.00
5,800.00	8.32	278.25	5,710.35	130.49	-899.87	909.28	2.00	-2.00	0.00
5,900.00	6.32	278.25	5,809.53	132.32	-912.48	922.03	2.00	-2.00	0.00
6,000.00	4.32	278.25	5,909.09	133.65	-921.66	931.30	2.00	-2.00	0.00
6,100.00	2.32	278.25	6,008.92	134.48	-927.40	937.10	2.00	-2.00	0.00
6,200.00	0.32	278.25	6,108.89	134.81	-929.68	939.41	2.00	-2.00	0.00
6,216.11	0.00	0.00	6,125.00	134.82	-929.73	939.45	2.00	-2.00	507.30
<b>Start 1955.00 hold at 6216.11 MD</b>									
6,300.00	0.00	0.00	6,208.89	134.82	-929.73	939.45	0.00	0.00	0.00
6,400.00	0.00	0.00	6,308.89	134.82	-929.73	939.45	0.00	0.00	0.00
6,500.00	0.00	0.00	6,408.89	134.82	-929.73	939.45	0.00	0.00	0.00
6,600.00	0.00	0.00	6,508.89	134.82	-929.73	939.45	0.00	0.00	0.00
6,700.00	0.00	0.00	6,608.89	134.82	-929.73	939.45	0.00	0.00	0.00
6,800.00	0.00	0.00	6,708.89	134.82	-929.73	939.45	0.00	0.00	0.00
6,900.00	0.00	0.00	6,808.89	134.82	-929.73	939.45	0.00	0.00	0.00
7,000.00	0.00	0.00	6,908.89	134.82	-929.73	939.45	0.00	0.00	0.00
7,100.00	0.00	0.00	7,008.89	134.82	-929.73	939.45	0.00	0.00	0.00
7,200.00	0.00	0.00	7,108.89	134.82	-929.73	939.45	0.00	0.00	0.00
7,246.11	0.00	0.00	7,155.00	134.82	-929.73	939.45	0.00	0.00	0.00
<b>NIOBRARA</b>									
7,300.00	0.00	0.00	7,208.89	134.82	-929.73	939.45	0.00	0.00	0.00
7,400.00	0.00	0.00	7,308.89	134.82	-929.73	939.45	0.00	0.00	0.00
7,500.00	0.00	0.00	7,408.89	134.82	-929.73	939.45	0.00	0.00	0.00
7,586.11	0.00	0.00	7,495.00	134.82	-929.73	939.45	0.00	0.00	0.00
<b>CODELL</b>									
7,600.00	0.00	0.00	7,508.89	134.82	-929.73	939.45	0.00	0.00	0.00
7,671.11	0.00	0.00	7,580.00	134.82	-929.73	939.45	0.00	0.00	0.00
<b>GREENHORN</b>									
7,700.00	0.00	0.00	7,608.89	134.82	-929.73	939.45	0.00	0.00	0.00
7,800.00	0.00	0.00	7,708.89	134.82	-929.73	939.45	0.00	0.00	0.00
7,900.00	0.00	0.00	7,808.89	134.82	-929.73	939.45	0.00	0.00	0.00
8,000.00	0.00	0.00	7,908.89	134.82	-929.73	939.45	0.00	0.00	0.00
8,021.11	0.00	0.00	7,930.00	134.82	-929.73	939.45	0.00	0.00	0.00
<b>J-SAND</b>									
8,100.00	0.00	0.00	8,008.89	134.82	-929.73	939.45	0.00	0.00	0.00
8,171.11	0.00	0.00	8,080.00	134.82	-929.73	939.45	0.00	0.00	0.00
<b>PBHL_Morton 21-12</b>									

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<b>Site:</b>	WELD_MORTON 17-12 PAD	<b>North Reference:</b>	True
<b>Well:</b>	Morton 21-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Morton 21-12(wp01)		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
PBHL_Morton 21-12	0.00	0.43	8,080.00	134.83	-929.73	1,268,765.03	3,184,859.93	40° 4' 9.336 N	104° 50' 22.096 W
- plan hits target center									
- Circle (radius 50.00)									

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

Formations						
Measured Depth	Vertical Depth				Dip	Dip Direction
(ft)	(ft)	Name		Lithology	(°)	(°)
3,325.33	3,285.00	PARKMAN				
4,682.84	4,615.00	SUSSEX				
7,246.11	7,155.00	NIOBRARA				
7,586.11	7,495.00	CODELL				
7,671.11	7,580.00	GREENHORN				
8,021.11	7,930.00	J-SAND				

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W		Comment
		(ft)	(ft)		
950.00	950.00	0.00	0.00		Start Build 2.00
1,527.71	1,523.80	8.33	-57.45		Start 4110.70 hold at 1527.71 MD
5,638.41	5,551.20	126.49	-872.28		Start Drop -2.00
6,216.11	6,125.00	134.82	-929.73		Start 1955.00 hold at 6216.11 MD
8,171.11	8,080.00	134.82	-929.73		TD at 8171.11