



Company: Anadarko

Site: Morton

Well: 17-12

Project: Weld County, Colorado (NAD83)

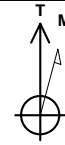
Rig Name: Xtreme 11



Planning: 936.442.2510 Fax: 936.442.2515  
Operations: 936.442.2500 Fax: 936.442.2599

#### ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	V Sect	Departure	Annotation
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	KOP, 2.00°/100' Build
550.00	6.00	82.19	549.45	2.13	15.55	15.69	15.69	Begin 6.00° Tangent
967.84	6.00	82.19	965.00	8.07	58.82	59.37	59.37	Begin 2.00°/100' Build
1367.61	14.00	82.19	1358.38	17.49	127.52	128.72	128.72	Begin 14.00° Tangent
2625.80	14.00	82.19	2579.23	58.84	428.99	433.00	433.00	Begin 1.50°/100' Drop
3558.83	0.00	0.00	3503.00	74.25	541.32	546.39	546.39	Begin Vertical Hold
7675.83	0.00	0.00	7620.00	74.25	541.32	546.39	546.39	PBHL



Azimuths to True North  
Magnetic North: 8.79°

Magnetic Field  
Strength: 52900.2snT  
Dip Angle: 66.75°  
Date: 12/30/2011  
Model: WMM\_2010

US State Plane 1983  
Colorado Northern Zone

Created By: Megan Pope  
Date: 11:19, January 03 2012  
Plan: Design #2

#### DESIGN TARGET DETAILS

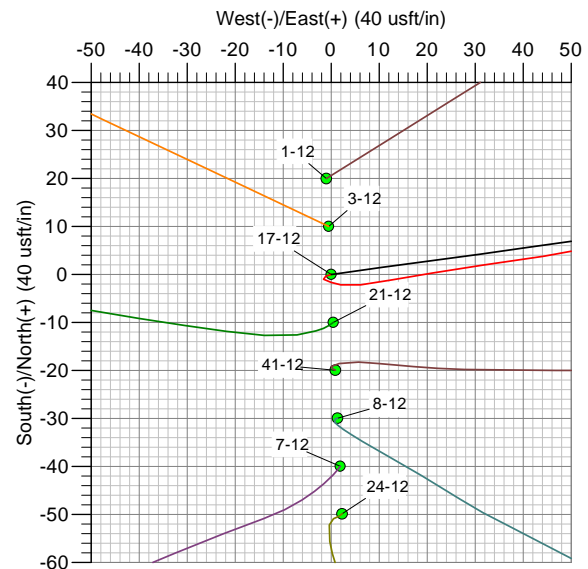
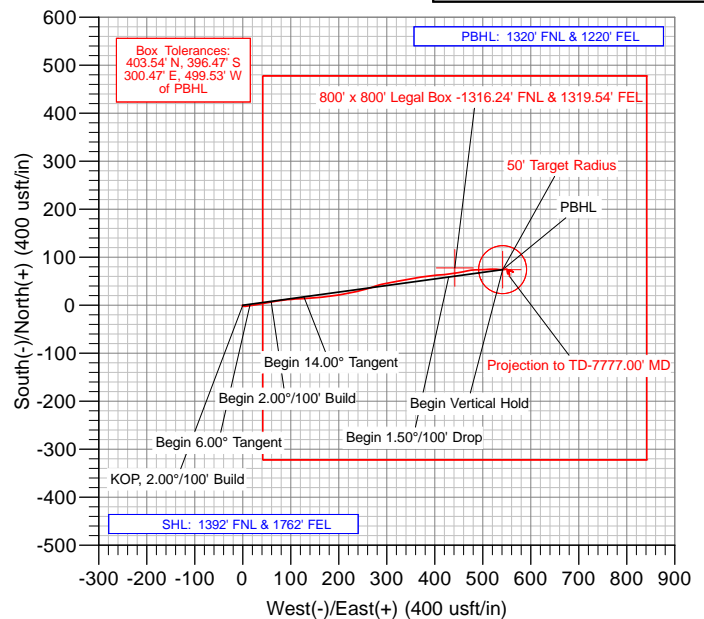
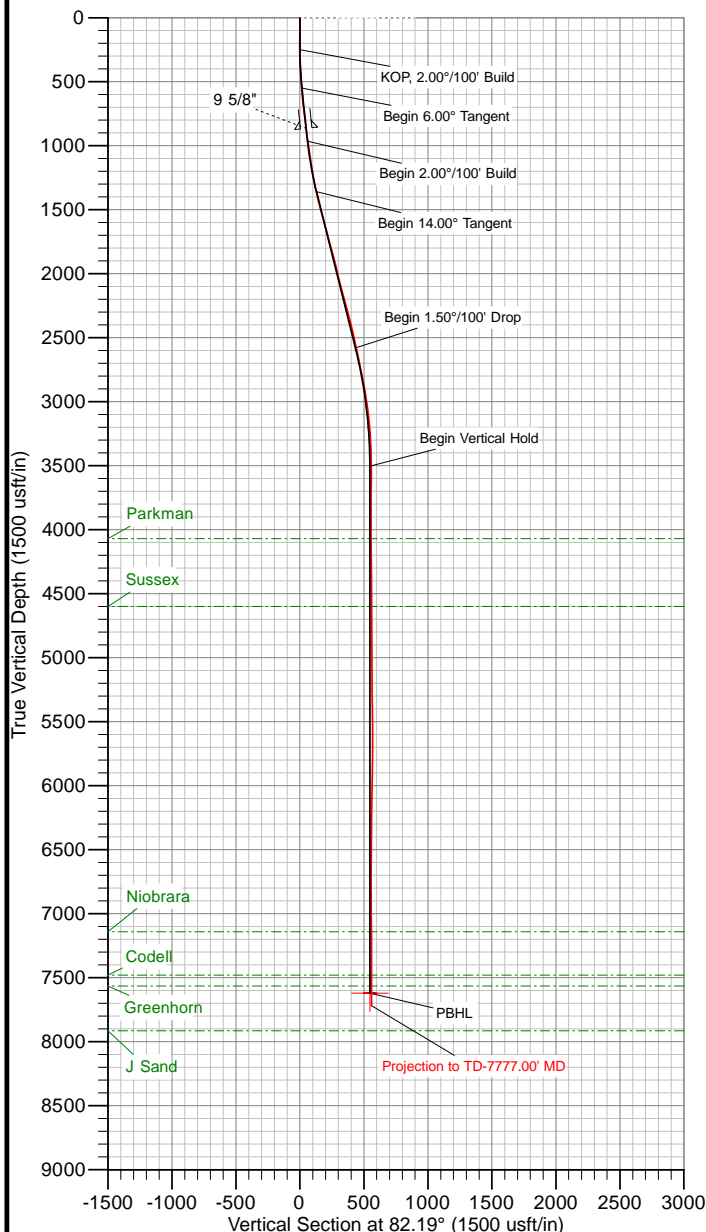
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
800' x 800' Legal Box -1316.24' FNL & 1319.54' FEL	0.00	77.68	441.75	40° 4' 8.8714 N	104° 50' 4.459 W
PBHL v2 - Morton 17-12	7620.00	74.25	541.32	40° 4' 8.8375 N	104° 50' 3.178 W

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
4070.00	4125.83	Parkman
4600.00	4655.83	Sussex
7140.00	7195.83	Niobrara
7480.00	7535.83	Codell
7565.00	7620.83	Greenhorn

#### SURFACE LOCATION

Northing: 1268647.30  
Easting: 3185790.19  
Latitude: 40° 4' 8.1038 N  
Longitude: 104° 50' 10.141 W  
Ground Elevation: 4905.00  
WELL @ 4920.00usft (Xtreme 11)



The customer should only rely on this document after independently verifying all paths, targets, coordinates, lease and hard lines represented. Any decisions made or wells drilled utilizing this or any other information supplied by MS Energy are at the sole risk and responsibility of the customer. MS Energy is not responsible for the accuracy of this schematic or the information contained herein.



## **Anadarko**

**Weld County, Colorado (NAD83)**

**Morton**

**17-12**

**Wellbore #1**

**Survey: MS MWD**

## **Standard Survey Report**

**03 January, 2012**

<b>Company:</b>	Anadarko	<b>Local Co-ordinate Reference:</b>	Well 17-12
<b>Project:</b>	Weld County, Colorado (NAD83)	<b>TVD Reference:</b>	WELL @ 4920.00usft (Xtreme 11)
<b>Site:</b>	Morton	<b>MD Reference:</b>	WELL @ 4920.00usft (Xtreme 11)
<b>Well:</b>	17-12	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys	<b>Database:</b>	Southern Region

<b>Project</b>	Weld County, Colorado (NAD83)		
<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		

Well	17-12					
Well Position	+N/-S	0.00 usft	Northing:	1,268,647.30 usft	Latitude:	40° 4' 8.1038 N
	+E/-W	0.00 usft	Easting:	3,185,790.19 usft	Longitude:	104° 50' 10.141 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,905.00 usft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	WMM_2010	12/30/11	8.80	66.75	52,900

<b>Design</b>	Surveys				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	82.19	

<b>Survey Program</b>	<b>Date</b>	01/03/12			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
131.00	7,777.00	MS MWD (Wellbore #1)	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
131.00	1.00	252.40	130.99	-0.35	-1.09	-1.13	0.76	0.76	0.00	
219.00	0.60	147.10	218.99	-0.96	-1.57	-1.69	1.47	-0.45	-119.66	
307.00	1.80	102.70	306.97	-1.66	0.03	-0.20	1.63	1.36	-50.45	
369.00	2.00	103.40	368.93	-2.12	2.03	1.72	0.32	0.32	1.13	
460.00	3.30	82.30	459.84	-2.14	6.17	5.82	1.76	1.43	-23.19	
551.00	4.80	80.30	550.61	-1.14	12.52	12.25	1.66	1.65	-2.20	
641.00	6.40	80.50	640.17	0.32	21.18	21.03	1.78	1.78	0.22	
732.00	6.90	81.90	730.56	1.92	31.59	31.56	0.58	0.55	1.54	
836.00	7.40	81.20	833.75	3.83	44.40	44.50	0.49	0.48	-0.67	
968.00	7.50	78.60	964.64	6.83	61.24	61.60	0.27	0.08	-1.97	
1,060.00	7.40	80.70	1,055.86	8.98	72.97	73.52	0.32	-0.11	2.28	
1,151.00	9.10	83.00	1,145.92	10.80	85.90	86.57	1.90	1.87	2.53	
1,242.00	10.60	85.80	1,235.57	12.29	101.39	102.12	1.73	1.65	3.08	
1,332.00	11.70	86.80	1,323.87	13.41	118.76	119.48	1.24	1.22	1.11	

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<b>Site:</b>	Morton	<b>MD Reference:</b>	WELL @ 4920.00usft (Xtreme 11)
<b>Well:</b>	17-12	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys	<b>Database:</b>	Southern Region

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
1,423.00	13.40	86.30	1,412.70	14.60	138.50	139.19	1.87	1.87	-0.55	
1,514.00	15.40	83.80	1,500.83	16.59	161.03	161.79	2.30	2.20	-2.75	
1,605.00	15.70	82.40	1,588.50	19.52	185.25	186.18	0.53	0.33	-1.54	
1,696.00	15.30	80.70	1,676.19	23.09	209.30	210.50	0.67	-0.44	-1.87	
1,786.00	14.80	77.00	1,763.11	27.60	232.22	233.82	1.20	-0.56	-4.11	
1,877.00	14.80	75.40	1,851.09	33.14	254.79	256.93	0.45	0.00	-1.76	
1,968.00	13.90	70.30	1,939.25	39.75	276.33	279.17	1.70	-0.99	-5.60	
2,059.00	14.20	79.60	2,027.54	45.45	297.60	301.02	2.50	0.33	10.22	
2,150.00	15.00	79.10	2,115.60	49.70	320.15	323.93	0.89	0.88	-0.55	
2,241.00	15.40	80.70	2,203.42	53.88	343.63	347.77	0.64	0.44	1.76	
2,332.00	14.20	78.90	2,291.40	57.98	366.51	370.99	1.41	-1.32	-1.98	
2,422.00	14.00	85.60	2,378.69	60.94	388.20	392.88	1.83	-0.22	7.44	
2,513.00	13.30	84.20	2,467.12	62.84	409.59	414.33	0.85	-0.77	-1.54	
2,604.00	12.00	82.30	2,555.91	65.17	429.38	434.25	1.50	-1.43	-2.09	
2,694.00	12.50	81.00	2,643.86	67.94	448.27	453.34	0.63	0.56	-1.44	
2,785.00	11.60	78.00	2,732.86	71.39	466.95	472.32	1.20	-0.99	-3.30	
2,876.00	11.10	87.70	2,822.09	73.64	484.65	490.16	2.17	-0.55	10.66	
2,967.00	9.60	87.70	2,911.60	74.30	500.99	506.43	1.65	-1.65	0.00	
3,058.00	8.80	85.80	3,001.43	75.11	515.51	520.93	0.94	-0.88	-2.09	
3,149.00	6.70	96.30	3,091.60	75.04	527.73	533.03	2.77	-2.31	11.54	
3,240.00	4.70	93.00	3,182.15	74.26	536.73	541.84	2.23	-2.20	-3.63	
3,331.00	4.70	82.80	3,272.84	74.53	544.15	549.23	0.92	0.00	-11.21	
3,422.00	2.30	72.60	3,363.67	75.55	549.60	554.76	2.71	-2.64	-11.21	
3,603.00	1.60	203.40	3,544.62	74.31	552.06	557.04	1.97	-0.39	72.27	
3,785.00	1.50	177.50	3,726.55	69.60	551.15	555.50	0.39	-0.05	-14.23	
3,966.00	1.40	155.00	3,907.50	65.23	552.19	555.93	0.32	-0.06	-12.43	
4,148.00	1.10	339.30	4,089.48	64.85	552.51	556.20	1.37	-0.16	-96.54	
4,330.00	1.00	18.60	4,271.45	67.99	552.40	556.52	0.39	-0.05	21.59	
4,512.00	1.20	28.00	4,453.42	71.18	553.80	558.34	0.15	0.11	5.16	
4,693.00	0.60	38.70	4,634.40	73.59	555.29	560.13	0.34	-0.33	5.91	
4,875.00	0.30	85.40	4,816.39	74.37	556.36	561.30	0.25	-0.16	25.66	
5,056.00	0.60	153.80	4,997.39	73.56	557.25	562.07	0.31	0.17	37.79	
5,238.00	0.60	122.90	5,179.38	72.19	558.47	563.10	0.18	0.00	-16.98	
5,420.00	1.10	118.80	5,361.36	70.83	560.80	565.22	0.28	0.27	-2.25	
5,601.00	1.10	122.70	5,542.32	69.05	563.78	567.94	0.04	0.00	2.15	
5,783.00	1.10	300.40	5,724.31	68.99	563.75	567.89	1.21	0.00	97.64	
5,965.00	1.00	291.30	5,906.28	70.45	560.76	565.13	0.11	-0.05	-5.00	
6,146.00	1.10	289.20	6,087.25	71.60	557.65	562.20	0.06	0.06	-1.16	
6,328.00	0.70	283.70	6,269.23	72.44	554.92	559.61	0.22	-0.22	-3.02	
6,509.00	0.60	256.30	6,450.22	72.47	552.92	557.64	0.18	-0.06	-15.14	
6,691.00	0.50	258.60	6,632.21	72.09	551.22	555.90	0.06	-0.05	1.26	
6,872.00	0.60	112.90	6,813.21	71.57	551.32	555.93	0.58	0.06	-80.50	
7,054.00	0.90	136.80	6,995.19	70.15	553.17	557.58	0.23	0.16	13.13	
7,236.00	1.00	154.70	7,177.17	67.67	554.83	558.88	0.17	0.05	9.84	

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<b>Design:</b>	Surveys	<b>Database:</b>	Southern Region

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
7,417.00	0.70	174.60	7,358.15	65.15	555.61	559.31	0.23	-0.17	10.99	
7,599.00	0.70	178.40	7,540.13	62.93	555.75	559.14	0.03	0.00	2.09	
7,732.00	0.70	190.20	7,673.12	61.32	555.62	558.80	0.11	0.00	8.87	
7,777.00	0.70	190.20	7,718.12	60.77	555.53	558.63	0.00	0.00	0.00	
Projection to TD-7777.00' MD										

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
7,777.00	7,718.12	60.77	555.53	Projection to TD-7777.00' MD	