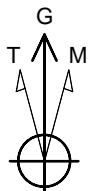


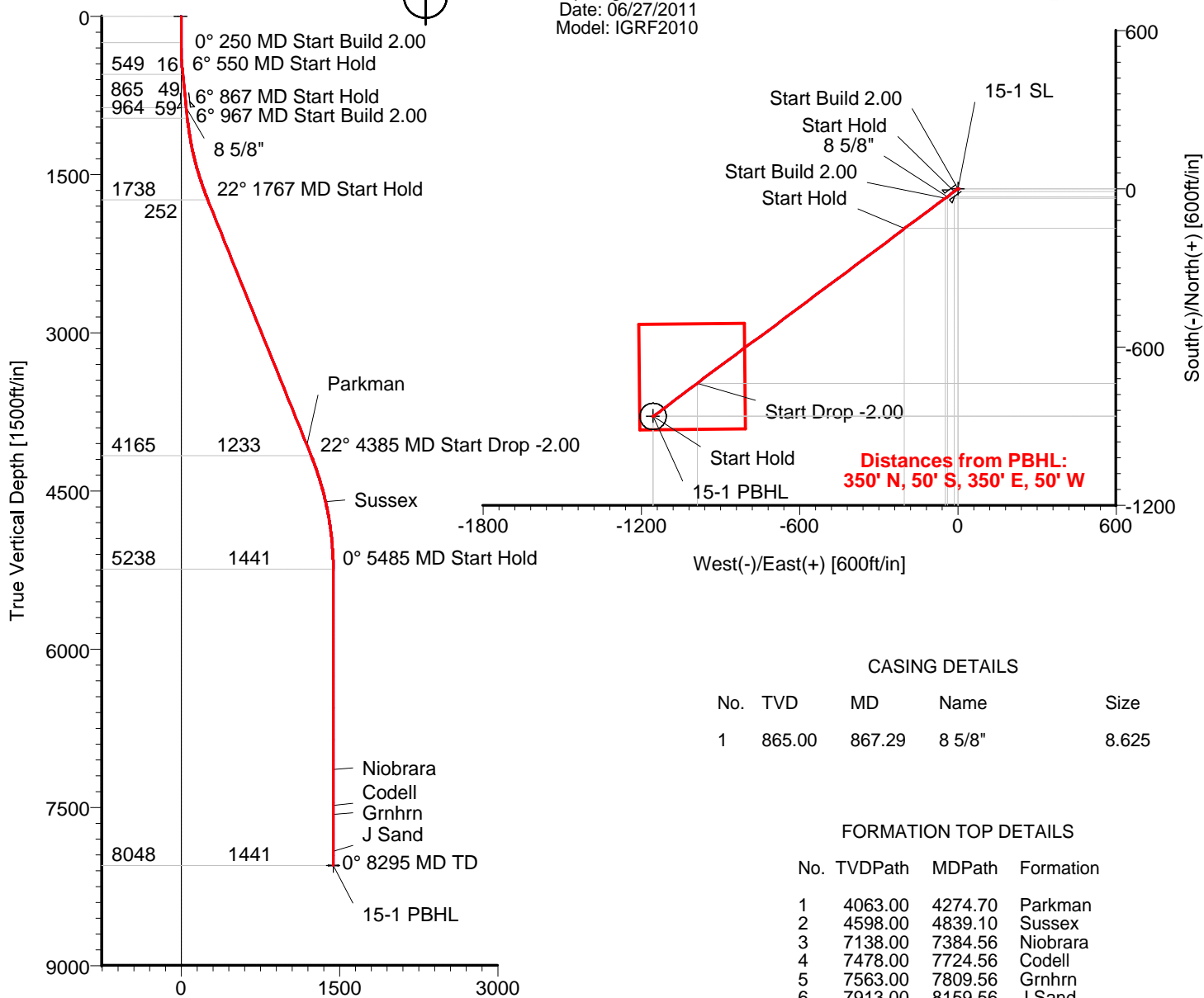
# ANADARKO PETROLEUM

Field: Weld County, CO  
Site: Morton 20-1 Pad  
Well: 15-1  
Wellpath: Original Hole  
Plan: Plan #1



Azimuths to Grid North  
True North: -0.43°  
Magnetic North: 8.44°

Magnetic Field  
Strength: 52989nT  
Dip Angle: 66.78°  
Date: 06/27/2011  
Model: IGRF2010



## CASING DETAILS

No.	TVD	MD	Name	Size
1	865.00	867.29	8 5/8"	8.625

## FORMATION TOP DETAILS

No.	TVDPath	MDPath	Formation
1	4063.00	4274.70	Parkman
2	4598.00	4839.10	Sussex
3	7138.00	7384.56	Niobrara
4	7478.00	7724.56	Codell
5	7563.00	7809.56	Grnhn
6	7913.00	8159.56	J Sand

Vertical Section at 233.23° [1500ft/in]

## TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
15-1 SL	0.00	0.00	0.00	40°04'35.434N	104°50'00.152W	Point
15-1 PBHL	8048.00	-862.86	-1154.67	40°04'26.992N	104°50'15.089W	Circle (Radius: 50)

## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	233.23	0.00	0.00	0.00	0.00	0.00	0.00	
2	250.00	0.00	233.23	250.00	0.00	0.00	0.00	233.23	0.00	
3	550.00	6.00	233.23	549.45	-9.39	-12.57	2.00	233.23	15.69	
4	867.29	6.00	233.23	865.00	-29.25	-39.14	0.00	0.00	48.86	
5	967.29	6.00	233.23	964.45	-35.50	-47.51	0.00	0.00	59.31	
6	1767.29	22.00	233.23	1738.17	-150.98	-202.04	2.00	0.00	252.22	
7	4385.06	22.00	233.23	4165.33	-737.99	-987.57	0.00	0.00	1232.86	
8	5485.06	0.00	233.23	5238.50	-862.86	-1154.67	2.00	180.00	1441.46	
9	8294.56	0.00	233.23	8048.00	-862.86	-1154.67	0.00	0.00	1441.46	15-1 PBHL

Plan: Plan #1 (15-1/Original Hole)

Created By: Ivonne Gonzalez

Date: 06/27/2011

ARCHER DIRECTIONAL DRILLING SERVICES  
911 Regional Park Drive Houston, Texas 77060  
Phone: 713-934-9600 Fax: 713-934-9067

**Archer**

# ARCHER

## Planning Report

<b>Company:</b> ANADARKO PETROLEUM <b>Field:</b> Weld County, CO <b>Site:</b> Morton 20-1 Pad <b>Well:</b> 15-1 <b>Wellpath:</b> Original Hole	<b>Date:</b> 06/27/2011 <b>Co-ordinate(NE) Reference:</b> <b>Vertical (TVD) Reference:</b> <b>Section (VS) Reference:</b> <b>Plan:</b>	<b>Time:</b> 12:59:05 Well: 15-1, Grid North 4898'GL+15'KB 4913.0 Well (0.00N,0.00E,233.23Azi) Plan #1	<b>Page:</b> 1
--	--	--	----------------

**Field:** Weld County, CO

**Map System:** US State Plane Coordinate System 1983  
**Geo Datum:** GRS 1980  
**Sys Datum:** Mean Sea Level

**Map Zone:** Colorado, Northern Zone  
**Coordinate System:** Well Centre  
**Geomagnetic Model:** IGRF2010

**Site:** Morton 20-1 Pad

Centered on 23-1

<b>Site Position:</b>	<b>Northing:</b> 1271420.72 ft	<b>Latitude:</b> 40 4 35.432 N
<b>From:</b> Geographic	<b>Easting:</b> 3186532.35 ft	<b>Longitude:</b> 104 50 0.409 W
<b>Position Uncertainty:</b> 0.00 ft		<b>North Reference:</b> Grid
<b>Ground Level:</b> 4898.00 ft		<b>Grid Convergence:</b> 0.43 deg

**Well:** 15-1

**Slot Name:** 15-1

<b>Well Position:</b>	<b>Northing:</b> 1271421.08 ft	<b>Latitude:</b> 40 4 35.434 N
+N/-S 0.36 ft	<b>Easting :</b> 3186552.35 ft	<b>Longitude:</b> 104 50 0.152 W
+E/-W 20.00 ft		
<b>Position Uncertainty:</b> 0.00 ft		

**Wellpath:** Original Hole

**Drilled From:** Surface  
**Tie-on Depth:** 0.00 ft  
**Above System Datum:** Mean Sea Level  
**Declination:** 8.87 deg  
**Mag Dip Angle:** 66.78 deg  
**+E/-W**  
**Direction**  
 deg

**Current Datum:** 4898'GL+15'KB  
**Magnetic Data:** 06/27/2011  
**Field Strength:** 52989 nT  
**Vertical Section:** Depth From (TVD)  
 ft

0.00	0.00	0.00	233.23
------	------	------	--------

**Plan:** Plan #1

**Date Composed:** 06/27/2011  
**Version:** 1  
**Tied-to:** From Surface

**Principal:** Yes

### Plan Section Information

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	TFO deg	Target
0.00	0.00	233.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
250.00	0.00	233.23	250.00	0.00	0.00	0.00	0.00	0.00	233.23	
550.00	6.00	233.23	549.45	-9.39	-12.57	2.00	2.00	0.00	233.23	
867.29	6.00	233.23	865.00	-29.25	-39.14	0.00	0.00	0.00	0.00	
967.29	6.00	233.23	964.45	-35.50	-47.51	0.00	0.00	0.00	0.00	
1767.29	22.00	233.23	1738.17	-150.98	-202.04	2.00	2.00	0.00	0.00	
4385.06	22.00	233.23	4165.33	-737.99	-987.57	0.00	0.00	0.00	0.00	
5485.06	0.00	233.23	5238.50	-862.86	-1154.67	2.00	-2.00	0.00	180.00	
8294.56	0.00	233.23	8048.00	-862.86	-1154.67	0.00	0.00	0.00	0.00	15-1 PBHL

### Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
967.29	6.00	233.23	964.45	-35.50	-47.51	59.31	0.00	0.00	0.00	
1000.00	6.65	233.23	996.97	-37.66	-50.40	62.92	2.00	2.00	0.00	
1100.00	8.65	233.23	1096.07	-45.64	-61.07	76.24	2.00	2.00	0.00	
1200.00	10.65	233.23	1194.65	-55.67	-74.50	93.01	2.00	2.00	0.00	
1300.00	12.65	233.23	1292.58	-67.76	-90.68	113.20	2.00	2.00	0.00	
1400.00	14.65	233.23	1389.75	-81.90	-109.59	136.81	2.00	2.00	0.00	
1500.00	16.65	233.23	1486.04	-98.05	-131.20	163.79	2.00	2.00	0.00	
1600.00	18.65	233.23	1581.32	-116.20	-155.50	194.12	2.00	2.00	0.00	
1700.00	20.65	233.23	1675.49	-136.33	-182.44	227.75	2.00	2.00	0.00	
1767.29	22.00	233.23	1738.17	-150.98	-202.04	252.22	2.00	2.00	0.00	
1800.00	22.00	233.23	1768.50	-158.32	-211.86	264.48	0.00	0.00	0.00	
1900.00	22.00	233.23	1861.22	-180.74	-241.86	301.94	0.00	0.00	0.00	
2000.00	22.00	233.23	1953.94	-203.16	-271.87	339.40	0.00	0.00	0.00	

# ARCHER

## Planning Report

**Company:** ANADARKO PETROLEUM  
**Field:** Weld County, CO  
**Site:** Morton 20-1 Pad  
**Well:** 15-1  
**Wellpath:** Original Hole

**Date:** 06/27/2011  
**Co-ordinate(NE) Reference:** Well: 15-1, Grid North  
**Vertical (TVD) Reference:** 4898'GL+15'KB 4913.0  
**Section (VS) Reference:** Well (0.00N,0.00E,233.23Azi)  
**Plan:** Plan #1

**Page:** 2

### Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
2100.00	22.00	233.23	2046.66	-225.59	-301.88	376.86	0.00	0.00	0.00	
2200.00	22.00	233.23	2139.37	-248.01	-331.89	414.32	0.00	0.00	0.00	
2300.00	22.00	233.23	2232.09	-270.44	-361.90	451.78	0.00	0.00	0.00	
2400.00	22.00	233.23	2324.81	-292.86	-391.90	489.24	0.00	0.00	0.00	
2500.00	22.00	233.23	2417.53	-315.29	-421.91	526.70	0.00	0.00	0.00	
2600.00	22.00	233.23	2510.25	-337.71	-451.92	564.16	0.00	0.00	0.00	
2700.00	22.00	233.23	2602.97	-360.13	-481.93	601.62	0.00	0.00	0.00	
2800.00	22.00	233.23	2695.68	-382.56	-511.93	639.08	0.00	0.00	0.00	
2900.00	22.00	233.23	2788.40	-404.98	-541.94	676.54	0.00	0.00	0.00	
3000.00	22.00	233.23	2881.12	-427.41	-571.95	714.00	0.00	0.00	0.00	
3100.00	22.00	233.23	2973.84	-449.83	-601.96	751.46	0.00	0.00	0.00	
3200.00	22.00	233.23	3066.56	-472.25	-631.96	788.93	0.00	0.00	0.00	
3300.00	22.00	233.23	3159.28	-494.68	-661.97	826.39	0.00	0.00	0.00	
3400.00	22.00	233.23	3251.99	-517.10	-691.98	863.85	0.00	0.00	0.00	
3500.00	22.00	233.23	3344.71	-539.53	-721.99	901.31	0.00	0.00	0.00	
3600.00	22.00	233.23	3437.43	-561.95	-752.00	938.77	0.00	0.00	0.00	
3700.00	22.00	233.23	3530.15	-584.37	-782.00	976.23	0.00	0.00	0.00	
3800.00	22.00	233.23	3622.87	-606.80	-812.01	1013.69	0.00	0.00	0.00	
3900.00	22.00	233.23	3715.59	-629.22	-842.02	1051.15	0.00	0.00	0.00	
4000.00	22.00	233.23	3808.31	-651.65	-872.03	1088.61	0.00	0.00	0.00	
4100.00	22.00	233.23	3901.02	-674.07	-902.03	1126.07	0.00	0.00	0.00	
4200.00	22.00	233.23	3993.74	-696.50	-932.04	1163.53	0.00	0.00	0.00	
4274.70	22.00	233.23	4063.00	-713.25	-954.46	1191.51	0.00	0.00	0.00	Parkman
4300.00	22.00	233.23	4086.46	-718.92	-962.05	1200.99	0.00	0.00	0.00	
4385.06	22.00	233.23	4165.33	-737.99	-987.57	1232.86	0.00	0.00	0.00	
4400.00	21.70	233.23	4179.19	-741.32	-992.03	1238.42	2.00	-2.00	0.00	
4500.00	19.70	233.23	4272.73	-762.48	-1020.34	1273.76	2.00	-2.00	0.00	
4600.00	17.70	233.23	4367.45	-781.67	-1046.03	1305.83	2.00	-2.00	0.00	Sussex
4700.00	15.70	233.23	4463.22	-798.88	-1069.04	1334.56	2.00	-2.00	0.00	
4800.00	13.70	233.23	4559.95	-814.07	-1089.37	1359.94	2.00	-2.00	0.00	
4839.10	12.92	233.23	4598.00	-819.45	-1096.58	1368.94	2.00	-2.00	0.00	
4900.00	11.70	233.23	4657.49	-827.23	-1106.98	1381.93	2.00	-2.00	0.00	
5000.00	9.70	233.23	4755.75	-838.34	-1121.86	1400.49	2.00	-2.00	0.00	
5100.00	7.70	233.23	4854.59	-847.40	-1133.98	1415.62	2.00	-2.00	0.00	
5200.00	5.70	233.23	4953.91	-854.38	-1143.32	1427.29	2.00	-2.00	0.00	
5300.00	3.70	233.23	5053.56	-859.29	-1149.89	1435.48	2.00	-2.00	0.00	
5400.00	1.70	233.23	5153.45	-862.11	-1153.66	1440.20	2.00	-2.00	0.00	
5485.06	0.00	233.23	5238.50	-862.86	-1154.67	1441.46	2.00	-2.00	0.00	
5500.00	0.00	233.23	5253.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
5600.00	0.00	233.23	5353.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
5700.00	0.00	233.23	5453.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
5800.00	0.00	233.23	5553.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
5900.00	0.00	233.23	5653.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
6000.00	0.00	233.23	5753.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
6100.00	0.00	233.23	5853.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
6200.00	0.00	233.23	5953.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
6300.00	0.00	233.23	6053.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
6400.00	0.00	233.23	6153.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
6500.00	0.00	233.23	6253.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
6600.00	0.00	233.23	6353.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
6700.00	0.00	233.23	6453.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
6800.00	0.00	233.23	6553.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
6900.00	0.00	233.23	6653.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	

# ARCHER

## Planning Report

**Company:** ANADARKO PETROLEUM  
**Field:** Weld County, CO  
**Site:** Morton 20-1 Pad  
**Well:** 15-1  
**Wellpath:** Original Hole

**Date:** 06/27/2011  
**Co-ordinate(NE) Reference:** Well: 15-1, Grid North  
**Vertical (TVD) Reference:** 4898'GL+15'KB 4913.0  
**Section (VS) Reference:** Well (0.00N,0.00E,233.23Azi)  
**Plan:** Plan #1

**Page:** 3

### Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
7000.00	0.00	233.23	6753.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
7100.00	0.00	233.23	6853.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
7200.00	0.00	233.23	6953.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
7300.00	0.00	233.23	7053.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
7384.56	0.00	233.23	7138.00	-862.86	-1154.67	1441.46	0.00	0.00	0.00	Niobrara
7400.00	0.00	233.23	7153.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
7500.00	0.00	233.23	7253.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
7600.00	0.00	233.23	7353.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
7700.00	0.00	233.23	7453.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
7724.56	0.00	233.23	7478.00	-862.86	-1154.67	1441.46	0.00	0.00	0.00	Codell
7800.00	0.00	233.23	7553.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
7809.56	0.00	233.23	7563.00	-862.86	-1154.67	1441.46	0.00	0.00	0.00	Grnhm
7900.00	0.00	233.23	7653.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
8000.00	0.00	233.23	7753.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
8100.00	0.00	233.23	7853.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
8159.56	0.00	233.23	7913.00	-862.86	-1154.67	1441.46	0.00	0.00	0.00	J Sand
8200.00	0.00	233.23	7953.44	-862.86	-1154.67	1441.46	0.00	0.00	0.00	
8294.56	0.00	233.23	8048.00	-862.86	-1154.67	1441.46	0.00	0.00	0.00	15-1 PBHL

### Targets

Name	Description Dip. Dir.	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<--- Latitude ---> Deg Min Sec			<--- Longitude ---> Deg Min Sec		
15-1 SL		0.00	0.00	0.00	1271421.08	3186552.35	40	4	35.434 N	104	50	0.152 W
15-1 PBHL		8048.00	-862.86	-1154.67	1270558.21	3185397.68	40	4	26.992 N	104	50	15.089 W
-Circle (Radius: 50)												
-Plan hit target												

### Casing Points

MD ft	TVD ft	Diameter in	Hole Size in	Name
867.29	865.00	8.625	9.875	8 5/8"

### Formations

MD ft	TVD ft	Formations	Lithology	Dip Angle deg	Dip Direction deg
4274.70	4063.00	Parkman		0.00	0.00
4839.10	4598.00	Sussex		0.00	0.00
7384.56	7138.00	Niobrara		0.00	0.00
7724.56	7478.00	Codell		0.00	0.00
7809.56	7563.00	Grnhm		0.00	0.00
8159.56	7913.00	J Sand		0.00	0.00