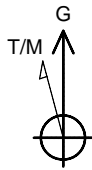


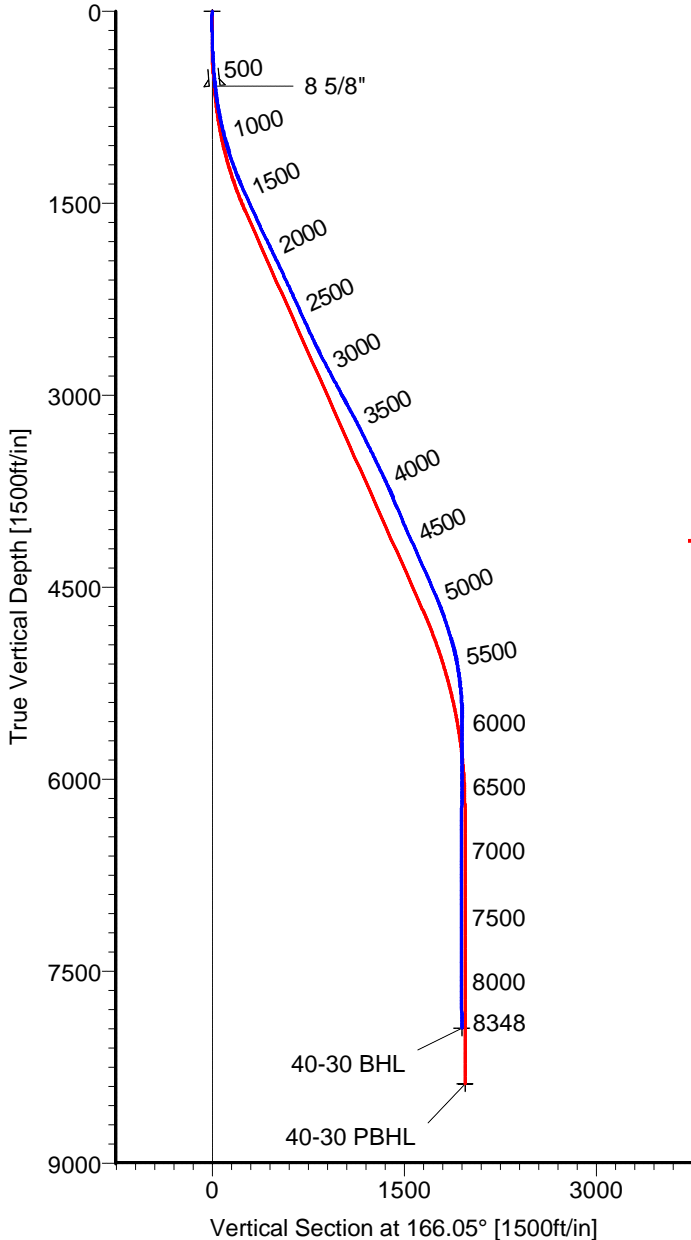
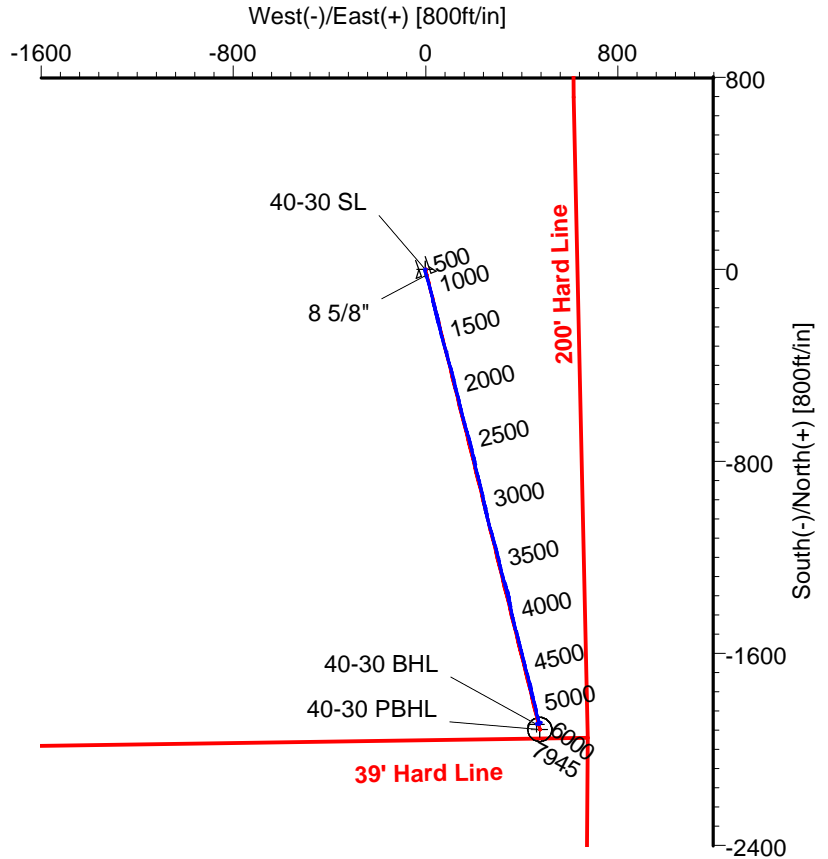
# ANADARKO PETROLEUM

Field: Weld County, CO  
 Site: Miller 1-30 Pad  
 Well: 40-30  
 Wellpath: Original Hole



Azimuths to Grid North  
 True North: -0.44°  
 Magnetic North: -0.44°

Magnetic Field  
 Strength: 0nT  
 Dip Angle: 0.00°  
 Date: 06/14/2010  
 Model: IGRF2010



### CASING DETAILS

No.	TVD	MD	Name	Size
1	584.20	585.00	8 5/8"	8.625

### LEGEND

- 40-30, Original Hole, Plan #1a
- Original Hole

### TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
40-30 SL	0.00	0.00	0.00	40°12'03.701N	104°48'46.362W	Point
40-30 BHL	7945.36	-1894.96	463.73	40°11'44.940N	104°48'40.575W	Point
40-30 PBHL	8378.00	-1916.94	476.15	40°11'44.721N	104°48'40.418W	Circle (Radius: 50)

Wellpath: (40-30/Original Hole)

Created By: Ivonne Gonzalez

Date: 11/21/2010

ALLIS CHALMERS DIRECTIONAL DRILLING SERVICE  
 911 Regional Park Drive Houston, Texas 77060  
 Phone: 713-934-9600 Fax: 713-934-9067



**DIRECTIONAL  
 DRILLING SERVICES**

# Allis-Chalmers Energy, Inc.

## Survey Report

<b>Company:</b> ANADARKO PETROLEUM	<b>Date:</b> 11/21/2010	<b>Time:</b> 08:13:10	<b>Page:</b> 1
<b>Field:</b> Weld County, CO	<b>Co-ordinate(NE) Reference:</b> Well: 40-30, Grid North		
<b>Site:</b> Miller 1-30 Pad	<b>Vertical (TVD) Reference:</b> SITE 4933.0		
<b>Well:</b> 40-30	<b>Section (VS) Reference:</b> Well (0.00N,0.00E,166.05Azi)		
<b>Wellpath:</b> Original Hole	<b>Survey Calculation Method:</b> Minimum Curvature	<b>Db:</b> Sybase	

**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:** Miller 1-30 Pad  
 Currently centered on 17-30

<b>Site Position:</b>	<b>Northing:</b> 1316822.56 ft	<b>Latitude:</b> 40 12 3.697 N
<b>From:</b> Geographic	<b>Easting:</b> 3191904.58 ft	<b>Longitude:</b> 104 48 46.775 W
<b>Position Uncertainty:</b> 0.00 ft		<b>North Reference:</b> Grid
<b>Ground Level:</b> 4920.00 ft		<b>Grid Convergence:</b> 0.44 deg

**Well:** 40-30 **Slot Name:** 40-30

<b>Well Position:</b>	<b>+N/-S</b> 0.69 ft	<b>Northing:</b> 1316823.25 ft	<b>Latitude:</b> 40 12 3.701 N
	<b>+E/-W</b> 32.03 ft	<b>Easting :</b> 3191936.61 ft	<b>Longitude:</b> 104 48 46.362 W
<b>Position Uncertainty:</b>	0.00 ft		

**Wellpath:** Original Hole

<b>Current Datum:</b> SITE	<b>Height</b> 4933.00 ft	<b>Drilled From:</b> Surface
<b>Magnetic Data:</b> 06/14/2010		<b>Tie-on Depth:</b> 0.00 ft
<b>Field Strength:</b> 0 nT		<b>Above System Datum:</b> Mean Sea Level
<b>Vertical Section:</b>		<b>Declination:</b> 0.00 deg
<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>Mag Dip Angle:</b> 0.00 deg
ft	ft	<b>+E/-W</b>
		ft
0.00	0.00	<b>Direction</b>
		deg
		0.00
		166.05

**Survey Program for Definitive Wellpath**

<b>Date:</b> 11/21/2010	<b>Validated:</b> No	<b>Version:</b> 0
<b>Actual From</b>	<b>To</b>	<b>Toolcode</b>
ft	ft	
44.00	8303.00	Survey #1 (44.00-8303.00)
8348.00	8348.00	Survey #2 (8348.00-8348.00)
		MWD
		Project
		Std MWD
		Projection

**Survey**

MD	Incl	Azim	TVD	+N/-S	+E/-W	VS	DLS	Build	Turn	Tool/Comment
ft	deg	deg	ft	ft	ft	ft	deg/100ft	deg/100ft	deg/100ft	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIE LINE
44.00	1.20	271.90	44.00	0.02	-0.46	-0.13	2.73	2.73	0.00	MWD
105.00	0.90	264.50	104.99	-0.01	-1.58	-0.37	0.54	-0.49	-12.13	MWD
166.00	1.40	208.60	165.98	-0.71	-2.41	0.11	1.91	0.82	-91.64	MWD
226.00	1.60	176.30	225.96	-2.19	-2.71	1.47	1.43	0.33	-53.83	MWD
286.00	2.50	165.80	285.92	-4.29	-2.33	3.61	1.62	1.50	-17.50	MWD
347.00	3.20	166.50	346.84	-7.24	-1.61	6.64	1.15	1.15	1.15	MWD
425.00	3.50	160.10	424.71	-11.59	-0.29	11.18	0.61	0.38	-8.21	MWD
516.00	4.40	162.20	515.49	-17.53	1.72	17.43	1.00	0.99	2.31	MWD
585.00	6.17	160.69	584.20	-23.55	3.76	23.76	2.57	2.56	-2.18	8 5/8"
598.00	6.50	160.50	597.12	-24.90	4.24	25.19	2.57	2.56	-1.48	MWD
690.00	8.60	166.10	688.31	-36.49	7.63	37.25	2.42	2.28	6.09	MWD
753.00	9.90	167.20	750.49	-46.34	9.96	47.38	2.08	2.06	1.75	MWD
844.00	12.00	165.00	839.83	-63.11	14.14	64.66	2.35	2.31	-2.42	MWD
935.00	13.40	167.90	928.61	-82.56	18.80	84.66	1.69	1.54	3.19	MWD
1025.00	15.00	164.30	1015.85	-103.97	24.14	106.72	2.03	1.78	-4.00	MWD
1116.00	18.10	167.50	1103.08	-129.11	30.38	132.63	3.55	3.41	3.52	MWD
1207.00	19.50	165.00	1189.22	-157.59	37.38	161.95	1.77	1.54	-2.75	MWD
1298.00	21.10	166.80	1274.57	-188.21	45.05	193.52	1.89	1.76	1.98	MWD
1388.00	23.60	165.40	1357.80	-221.42	53.29	227.74	2.84	2.78	-1.56	MWD
1479.00	24.80	166.50	1440.80	-257.61	62.34	265.04	1.41	1.32	1.21	MWD
1570.00	24.50	165.00	1523.51	-294.39	71.68	302.99	0.76	-0.33	-1.65	MWD

# Allis-Chalmers Energy, Inc.

## Survey Report

<b>Company:</b> ANADARKO PETROLEUM	<b>Date:</b> 11/21/2010	<b>Time:</b> 08:13:10	<b>Page:</b> 2
<b>Field:</b> Weld County, CO	<b>Co-ordinate(NE) Reference:</b> Well: 40-30, Grid North		
<b>Site:</b> Miller 1-30 Pad	<b>Vertical (TVD) Reference:</b> SITE 4933.0		
<b>Well:</b> 40-30	<b>Section (VS) Reference:</b> Well (0.00N,0.00E,166.05Azi)		
<b>Wellpath:</b> Original Hole	<b>Survey Calculation Method:</b> Minimum Curvature	<b>Db:</b> Sybase	

### 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
1661.00	24.60	163.30	1606.28	-330.76	82.00	340.77	0.78	0.11	-1.87	MWD
1751.00	26.00	164.30	1687.65	-367.69	92.72	379.20	1.63	1.56	1.11	MWD
1842.00	25.90	164.30	1769.47	-406.03	103.50	419.00	0.11	-0.11	0.00	MWD
1933.00	25.20	165.80	1851.58	-443.94	113.63	458.24	1.05	-0.77	1.65	MWD
2024.00	25.70	168.20	1933.75	-482.04	122.42	497.33	1.26	0.55	2.64	MWD
2114.00	25.20	165.00	2015.02	-519.65	131.37	535.99	1.63	-0.56	-3.56	MWD
2205.00	25.00	165.80	2097.42	-557.01	141.10	574.59	0.43	-0.22	0.88	MWD
2296.00	25.30	166.80	2179.80	-594.58	150.26	613.27	0.57	0.33	1.10	MWD
2387.00	25.00	165.00	2262.17	-632.08	159.67	651.94	0.90	-0.33	-1.98	MWD
2478.00	24.30	162.60	2344.88	-668.53	170.25	689.85	1.34	-0.77	-2.64	MWD
2569.00	24.30	164.00	2427.82	-704.39	181.01	727.25	0.63	0.00	1.54	MWD
2660.00	24.60	167.20	2510.66	-740.86	190.37	764.91	1.49	0.33	3.52	MWD
2751.00	25.50	168.20	2593.10	-778.51	198.57	803.42	1.09	0.99	1.10	MWD
2842.00	27.30	165.80	2674.61	-817.92	207.70	843.87	2.30	1.98	-2.64	MWD
2932.00	27.50	165.80	2754.51	-858.07	217.86	885.28	0.22	0.22	0.00	MWD
3023.00	28.00	166.50	2835.05	-899.21	228.00	927.65	0.66	0.55	0.77	MWD
3114.00	28.40	167.90	2915.25	-941.14	237.52	970.64	0.85	0.44	1.54	MWD
3205.00	27.30	169.30	2995.71	-982.81	245.93	1013.11	1.41	-1.21	1.54	MWD
3295.00	29.40	166.10	3074.91	-1024.54	255.07	1055.81	2.88	2.33	-3.56	MWD
3386.00	28.50	164.30	3154.54	-1067.12	266.31	1099.85	1.38	-0.99	-1.98	MWD
3477.00	27.10	164.30	3235.04	-1107.98	277.80	1142.27	1.54	-1.54	0.00	MWD
3568.00	26.00	164.00	3316.44	-1147.11	288.90	1182.92	1.22	-1.21	-0.33	MWD
3659.00	26.60	166.00	3398.02	-1186.05	299.33	1223.23	1.18	0.66	2.20	MWD
3749.00	26.20	167.90	3478.64	-1225.03	308.37	1263.24	1.04	-0.44	2.11	MWD
3840.00	25.50	166.00	3560.53	-1263.68	317.32	1302.91	1.19	-0.77	-2.09	MWD
3931.00	25.90	163.30	3642.53	-1301.72	327.77	1342.35	1.36	0.44	-2.97	MWD
4022.00	24.10	164.30	3725.00	-1338.65	338.51	1380.77	2.03	-1.98	1.10	MWD
4112.00	21.60	169.30	3807.94	-1372.62	346.56	1415.69	3.51	-2.78	5.56	MWD
4203.00	23.10	167.50	3892.10	-1406.51	353.53	1450.26	1.81	1.65	-1.98	MWD
4294.00	23.20	167.50	3975.78	-1441.44	361.28	1486.02	0.11	0.11	0.00	MWD
4384.00	24.30	165.80	4058.15	-1476.70	369.66	1522.26	1.44	1.22	-1.89	MWD
4475.00	24.50	165.40	4141.03	-1513.11	379.01	1559.85	0.29	0.22	-0.44	MWD
4566.00	23.90	166.10	4224.03	-1549.27	388.19	1597.16	0.73	-0.66	0.77	MWD
4657.00	24.50	165.40	4307.03	-1585.42	397.38	1634.46	0.73	0.66	-0.77	MWD
4748.00	24.10	165.40	4389.97	-1621.66	406.82	1671.90	0.44	-0.44	0.00	MWD
4839.00	23.20	166.50	4473.33	-1657.07	415.68	1708.41	1.10	-0.99	1.21	MWD
4929.00	23.20	166.10	4556.05	-1691.51	424.08	1743.86	0.18	0.00	-0.44	MWD
5020.00	21.50	166.10	4640.21	-1725.10	432.39	1778.46	1.87	-1.87	0.00	MWD
5111.00	19.20	166.50	4725.52	-1755.85	439.89	1810.11	2.53	-2.53	0.44	MWD
5201.00	17.80	166.10	4810.87	-1783.59	446.65	1838.66	1.56	-1.56	-0.44	MWD
5292.00	16.50	164.30	4897.82	-1809.53	453.49	1865.49	1.54	-1.43	-1.98	MWD
5383.00	14.30	168.60	4985.55	-1832.99	459.21	1889.64	2.72	-2.42	4.73	MWD
5474.00	10.90	166.80	5074.35	-1852.39	463.40	1909.47	3.76	-3.74	-1.98	MWD
5565.00	8.80	166.80	5164.00	-1867.55	466.95	1925.04	2.31	-2.31	0.00	MWD
5655.00	6.50	161.90	5253.20	-1879.10	470.11	1937.01	2.65	-2.56	-5.44	MWD
5746.00	4.60	169.30	5343.77	-1887.58	472.39	1945.79	2.23	-2.09	8.13	MWD
5837.00	2.50	154.20	5434.59	-1892.95	473.93	1951.37	2.51	-2.31	-16.59	MWD
5928.00	0.20	244.50	5525.56	-1894.81	474.65	1953.35	2.76	-2.53	99.23	MWD
6110.00	0.40	343.30	5707.56	-1894.33	474.18	1952.78	0.26	0.11	54.29	MWD
6290.00	0.40	22.00	5887.55	-1893.15	474.23	1951.64	0.15	0.00	21.50	MWD
6472.00	0.50	44.50	6069.55	-1891.99	475.03	1950.71	0.11	0.05	12.36	MWD
6654.00	1.20	59.60	6251.53	-1890.46	477.23	1949.76	0.40	0.38	8.30	MWD
6836.00	0.70	60.60	6433.50	-1888.95	479.84	1948.92	0.27	-0.27	0.55	MWD

# Allis-Chalmers Energy, Inc.

## Survey Report

<b>Company:</b> ANADARKO PETROLEUM	<b>Date:</b> 11/21/2010	<b>Time:</b> 08:13:10	<b>Page:</b> 3
<b>Field:</b> Weld County, CO	<b>Co-ordinate(NE) Reference:</b> Well: 40-30, Grid North		
<b>Site:</b> Miller 1-30 Pad	<b>Vertical (TVD) Reference:</b> SITE 4933.0		
<b>Well:</b> 40-30	<b>Section (VS) Reference:</b> Well (0.00N,0.00E,166.05Azi)		
<b>Wellpath:</b> Original Hole	<b>Survey Calculation Method:</b> Minimum Curvature	<b>Db:</b> Sybase	

### 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
7017.00	0.20	302.50	6614.50	-1888.24	480.54	1948.40	0.45	-0.28	-65.25	MWD
7199.00	0.70	243.10	6796.49	-1888.57	479.28	1948.41	0.34	0.27	-32.64	MWD
7380.00	1.10	260.70	6977.47	-1889.35	476.58	1948.52	0.27	0.22	9.72	MWD
7562.00	1.10	249.10	7159.44	-1890.26	473.22	1948.59	0.12	0.00	-6.37	MWD
7744.00	0.90	243.80	7341.41	-1891.51	470.31	1949.11	0.12	-0.11	-2.91	MWD
7925.00	0.50	273.70	7522.40	-1892.09	468.24	1949.17	0.29	-0.22	16.52	MWD
8107.00	1.10	239.90	7704.38	-1892.92	465.94	1949.41	0.41	0.33	-18.57	MWD
8303.00	0.50	207.90	7900.36	-1894.62	463.91	1950.57	0.37	-0.31	-16.33	MWD
8348.00	0.50	207.90	7945.36	-1894.96	463.73	1950.87	0.00	0.00	0.00	40-30 BHL

### Targets

Name	Description		TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<--- Latitude --->			<--- Longitude --->				
	Dip.	Dir.						Deg	Min	Sec	Deg	Min	Sec		
40-30 SL			0.00	0.00	0.00	1316823.25	3191936.61	40	12	3.701	N	104	48	46.362	W
40-30 BHL			7945.36	-1894.96	463.73	1314928.29	3192400.34	40	11	44.940	N	104	48	40.575	W
40-30 PBHL			8378.00	-1916.94	476.15	1314906.31	3192412.76	40	11	44.721	N	104	48	40.418	W
-Circle (Radius: 50)															

### Casing Points

MD ft	TVD ft	Diameter in	Hole Size in	Name
585.00	584.20	8.625	9.875	8 5/8"