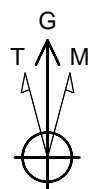


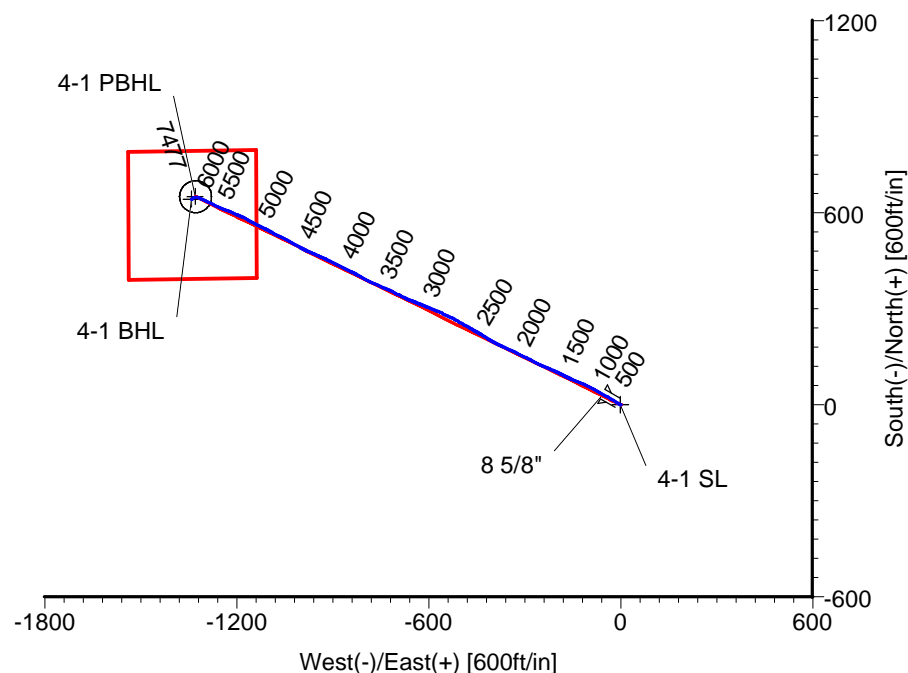
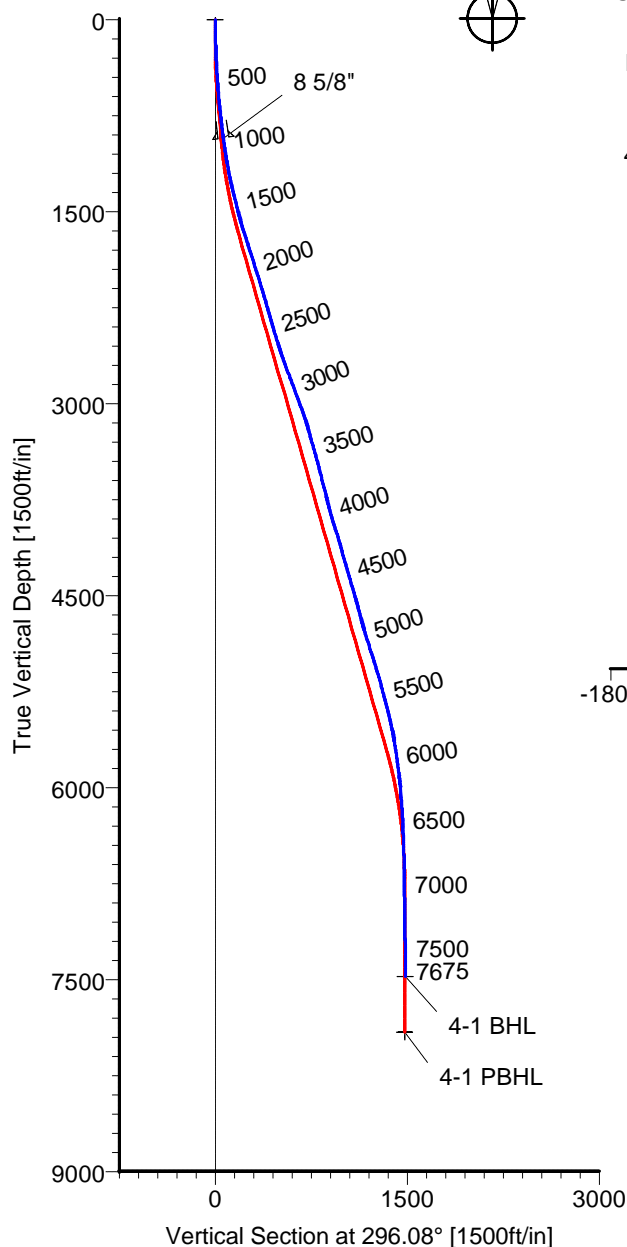
ANADARKO PETROLEUM

Field: Weld County, CO
Site: Bernhardt 3-1 Pad
Well: #4-1
Wellpath: Original Hole



Azimuths to Grid North
True North: -0.43°
Magnetic North: 8.63°

Magnetic Field
Strength: 53251nT
Dip Angle: 67.03°
Date: 5/5/2010
Model: IGRF2010



LEGEND

— #4-1, Original Hole, Plan #1
— Original Hole

CASING DETAILS

No.	TVD	MD	Name	Size
1	927.13	930.00	8 5/8"	8.625

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
4-1 SL	0.00	0.00	0.00	40°20'42.693N	104°50'28.800W	Point
4-1 BHL	7476.84	641.75	-1341.21	40°20'49.132N	104°50'46.061W	Point
4-1 PBHL	7913.00	650.04	-1328.07	40°20'49.213N	104°50'45.890W	Circle (Radius: 50)

Wellpath: (#4-1/Original Hole)

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

Created By: Ivonne Gonzalez

Date: 6/13/2010



DIRECTIONAL
DRILLING SERVICES

Allis-Chalmers Energy, Inc.

Survey Report

Company: ANADARKO PETROLEUM				Date: 6/13/2010		Time: 11:18:33		Page: 1	
Field: Weld County, CO				Co-ordinate(NE) Reference: Well: #4-1, Grid North					
Site: Bernhardt 3-1 Pad				Vertical (TVD) Reference: 4826'GL+13'KB 4839.0					
Well: #4-1				Section (VS) Reference: Well (0.00N,0.00E,296.08Azi)					
Wellpath: Original Hole				Survey Calculation Method: Minimum Curvature				Db: Sybase	

Field: Weld County, CO			
Map System: US State Plane Coordinate System 1983		Map Zone: Colorado, Northern Zone	
Geo Datum: GRS 1980		Coordinate System: Well Centre	
Sys Datum: Mean Sea Level		Geomagnetic Model: IGRF2010	

Site: Bernhardt 3-1 Pad					
Site Position:		Northing: 1369310.76 ft		Latitude: 40 20 43.008 N	
From: Geographic		Easting: 3183596.38 ft		Longitude: 104 50 28.824 W	
Position Uncertainty: 0.00 ft				North Reference: Grid	
Ground Level: 4826.00 ft				Grid Convergence: 0.43 deg	

Well: #4-1		Slot Name: 4-1			
Well Position: +N/-S -31.89 ft		Northing: 1369278.86 ft		Latitude: 40 20 42.693 N	
+E/-W 2.07 ft		Easting: 3183598.45 ft		Longitude: 104 50 28.800 W	
Position Uncertainty: 0.00 ft					

Wellpath: Original Hole				Drilled From: Surface	
Current Datum: 4826'GL+13'KB		Height: 4839.00 ft		Tie-on Depth: 0.00 ft	
Magnetic Data: 5/5/2010				Above System Datum: Mean Sea Level	
Field Strength: 53251 nT				Declination: 9.05 deg	
Vertical Section: Depth From (TVD)		+N/-S		Mag Dip Angle: 67.03 deg	
ft		ft		+E/-W	
				ft	
				Direction	
				deg	
0.00		0.00		0.00	
				296.08	

Survey Program for Definitive Wellpath				Version: 0	
Date: 6/13/2010		Validated: No		Toolcode	
Actual From		To		Tool Name	
ft		ft			
47.00	47.00	Survey #1 (47.00-7630.00)			
47.00	7630.00	Survey #1 (47.00-7630.00)			
7675.00	7675.00	Survey #2 (7675.00-7675.00)		MWD Std MWD	

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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIE LINE
47.00	0.50	289.60	47.00	0.07	-0.19	0.20	1.06	1.06	0.00	
108.00	0.90	288.60	107.99	0.31	-0.90	0.94	0.66	0.66	-1.64	
169.00	1.20	292.40	168.98	0.71	-1.94	2.06	0.50	0.49	6.23	
229.00	1.40	294.50	228.97	1.25	-3.19	3.42	0.34	0.33	3.50	
289.00	2.50	300.90	288.93	2.23	-4.98	5.45	1.87	1.83	10.67	
350.00	2.80	300.50	349.87	3.67	-7.41	8.26	0.49	0.49	-0.66	
429.00	3.90	299.80	428.73	5.98	-11.40	12.87	1.39	1.39	-0.89	
520.00	4.40	303.00	519.49	9.42	-17.01	19.42	0.61	0.55	3.52	
616.00	5.30	303.70	615.15	13.89	-23.79	27.47	0.94	0.94	0.73	
707.00	5.80	301.20	705.72	18.60	-31.22	36.22	0.61	0.55	-2.75	
796.00	6.50	301.20	794.21	23.54	-39.38	45.71	0.79	0.79	0.00	
885.00	7.70	298.40	882.53	28.98	-48.93	56.69	1.40	1.35	-3.15	
930.00	7.53	299.01	927.13	31.85	-54.16	62.65	0.42	-0.38	1.35	8 5/8"
965.00	7.40	299.50	961.83	34.07	-58.13	67.19	0.42	-0.37	1.41	
1056.00	8.80	298.80	1051.92	40.31	-69.33	79.99	1.54	1.54	-0.77	
1147.00	10.70	297.30	1141.60	47.54	-82.94	95.39	2.11	2.09	-1.65	
1237.00	11.10	295.20	1229.98	55.06	-98.20	112.41	0.63	0.44	-2.33	
1327.00	13.00	294.90	1317.99	63.01	-115.22	131.19	2.11	2.11	-0.33	
1419.00	14.10	292.80	1407.43	71.71	-134.94	152.73	1.31	1.20	-2.28	
1509.00	14.40	293.10	1494.66	80.35	-155.34	174.85	0.34	0.33	0.33	

Allis-Chalmers Energy, Inc.

Survey Report

Company: ANADARKO PETROLEUM	Date: 6/13/2010	Time: 11:18:33	Page: 2
Field: Weld County, CO	Co-ordinate(NE) Reference: Well: #4-1, Grid North		
Site: Bernhardt 3-1 Pad	Vertical (TVD) Reference: 4826'GL+13'KB 4839.0		
Well: #4-1	Section (VS) Reference: Well (0.00N,0.00E,296.08Azi)		
Wellpath: Original Hole	Survey Calculation Method: Minimum Curvature		Db: 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
1600.00	16.40	298.00	1582.39	90.82	-177.09	198.99	2.62	2.20	5.38	
1691.00	17.60	294.90	1669.42	102.65	-200.92	225.59	1.65	1.32	-3.41	
1780.00	17.80	292.10	1754.21	113.43	-225.73	252.61	0.98	0.22	-3.15	
1869.00	17.60	296.30	1839.00	124.51	-250.39	279.64	1.45	-0.22	4.72	
1959.00	17.80	296.60	1924.74	136.70	-274.89	307.00	0.24	0.22	0.33	
2048.00	17.10	296.30	2009.64	148.59	-298.79	333.69	0.79	-0.79	-0.34	
2139.00	17.20	296.30	2096.59	160.48	-322.84	360.52	0.11	0.11	0.00	
2229.00	16.40	294.40	2182.75	171.62	-346.34	386.53	1.08	-0.89	-2.11	
2320.00	15.70	293.50	2270.20	181.84	-369.33	411.67	0.82	-0.77	-0.99	
2410.00	16.20	298.40	2356.74	192.66	-391.55	436.38	1.60	0.56	5.44	
2501.00	17.20	301.90	2443.91	205.81	-414.14	462.45	1.56	1.10	3.85	
2591.00	16.70	300.50	2530.00	219.41	-436.57	488.58	0.72	-0.56	-1.56	
2681.00	19.00	300.20	2615.66	233.34	-460.38	516.09	2.56	2.56	-0.33	
2770.00	20.40	299.50	2699.45	248.27	-486.41	546.03	1.60	1.57	-0.79	
2861.00	20.90	299.10	2784.60	263.97	-514.39	578.07	0.57	0.55	-0.44	
2951.00	20.40	295.20	2868.82	278.46	-542.61	609.78	1.63	-0.56	-4.33	
3041.00	20.60	293.80	2953.12	291.53	-571.29	641.29	0.59	0.22	-1.56	
3132.00	19.70	291.70	3038.55	303.66	-600.19	672.58	1.27	-0.99	-2.31	
3222.00	18.10	291.40	3123.70	314.37	-627.30	701.64	1.78	-1.78	-0.33	
3312.00	15.80	291.00	3209.78	323.86	-651.76	727.78	2.56	-2.56	-0.44	
3402.00	16.00	296.30	3296.34	333.75	-674.32	752.39	1.63	0.22	5.89	
3492.00	15.50	297.70	3382.97	344.84	-696.09	776.81	0.70	-0.56	1.56	
3583.00	15.10	295.20	3470.74	355.54	-717.58	800.82	0.85	-0.44	-2.75	
3673.00	14.40	292.80	3557.78	364.86	-738.51	823.72	1.03	-0.78	-2.67	
3762.00	13.90	292.80	3644.07	373.29	-758.56	845.44	0.56	-0.56	0.00	
3852.00	13.70	294.50	3731.48	381.90	-778.23	866.88	0.50	-0.22	1.89	
3942.00	15.30	299.50	3818.61	392.17	-798.26	889.39	2.26	1.78	5.56	
4032.00	16.50	298.80	3905.17	404.18	-819.80	914.01	1.35	1.33	-0.78	
4122.00	17.80	295.90	3991.16	416.34	-843.37	940.54	1.73	1.44	-3.22	
4212.00	16.90	295.90	4077.07	428.07	-867.52	967.37	1.00	-1.00	0.00	
4302.00	15.50	295.90	4163.49	439.03	-890.10	992.48	1.56	-1.56	0.00	
4391.00	15.30	297.30	4249.30	449.61	-911.23	1016.11	0.47	-0.22	1.57	
4481.00	16.20	294.90	4335.92	460.35	-933.17	1040.54	1.23	1.00	-2.67	
4571.00	15.80	292.80	4422.43	470.38	-955.86	1065.32	0.78	-0.44	-2.33	
4662.00	16.70	293.80	4509.80	480.46	-979.24	1090.76	1.04	0.99	1.10	
4752.00	15.10	298.80	4596.35	491.32	-1001.35	1115.39	2.34	-1.78	5.56	
4841.00	14.10	299.80	4682.48	502.30	-1020.91	1137.79	1.16	-1.12	1.12	
4931.00	16.70	297.30	4769.24	513.68	-1041.92	1161.66	2.98	2.89	-2.78	
5021.00	18.00	297.30	4855.14	525.99	-1065.77	1188.49	1.44	1.44	0.00	
5112.00	18.10	298.00	4941.67	539.07	-1090.75	1216.68	0.26	0.11	0.77	
5202.00	16.70	297.00	5027.55	551.51	-1114.61	1243.58	1.59	-1.56	-1.11	
5290.00	15.70	295.90	5112.05	562.45	-1136.59	1268.13	1.19	-1.14	-1.25	
5381.00	15.70	298.80	5199.66	573.76	-1158.46	1292.74	0.86	0.00	3.19	
5471.00	15.50	296.60	5286.34	585.01	-1179.88	1316.93	0.69	-0.22	-2.44	
5560.00	14.40	293.50	5372.33	594.75	-1200.66	1339.88	1.53	-1.24	-3.48	
5651.00	13.20	293.10	5460.70	603.34	-1220.60	1361.56	1.32	-1.32	-0.44	
5741.00	11.80	292.10	5548.57	610.83	-1238.58	1381.00	1.57	-1.56	-1.11	
5831.00	9.00	292.40	5637.08	616.98	-1253.61	1397.21	3.11	-3.11	0.33	
5921.00	8.30	295.20	5726.06	622.42	-1266.00	1410.73	0.91	-0.78	3.11	
6011.00	7.70	294.50	5815.18	627.69	-1277.36	1423.25	0.68	-0.67	-0.78	
6102.00	6.90	298.00	5905.44	632.79	-1287.74	1434.81	1.01	-0.88	3.85	
6192.00	4.80	293.80	5994.97	636.84	-1295.96	1443.98	2.38	-2.33	-4.67	
6282.00	4.80	295.20	6084.65	639.97	-1302.81	1451.51	0.13	0.00	1.56	
6373.00	3.90	294.90	6175.39	642.89	-1309.06	1458.41	0.99	-0.99	-0.33	

Allis-Chalmers Energy, Inc.

Survey Report

Company: ANADARKO PETROLEUM Field: Weld County, CO Site: Bernhardt 3-1 Pad Well: #4-1 Wellpath: Original Hole	Date: 6/13/2010 Time: 11:18:33 Page: 3 Co-ordinate(NE) Reference: Well: #4-1, Grid North Vertical (TVD) Reference: 4826'GL+13'KB 4839.0 Section (VS) Reference: Well (0.00N,0.00E,296.08Azi) Survey Calculation Method: Minimum Curvature Db: Sybase
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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
6463.00	2.80	289.30	6265.23	644.91	-1313.91	1463.65	1.27	-1.22	-6.22	
6553.00	2.10	289.30	6355.15	646.18	-1317.55	1467.47	0.78	-0.78	0.00	
6644.00	1.60	286.80	6446.10	647.10	-1320.34	1470.38	0.56	-0.55	-2.75	
6824.00	0.90	296.30	6626.06	648.45	-1324.01	1474.27	0.40	-0.39	5.28	
7005.00	0.90	266.40	6807.04	648.99	-1326.70	1476.93	0.26	0.00	-16.52	
7185.00	1.60	239.70	6987.00	647.63	-1330.28	1479.55	0.50	0.39	-14.83	
7365.00	1.60	237.60	7166.93	645.02	-1334.57	1482.25	0.03	0.00	-1.17	
7545.00	1.40	245.00	7346.86	642.74	-1338.69	1484.95	0.15	-0.11	4.11	
7630.00	1.10	250.60	7431.84	642.03	-1340.40	1486.17	0.38	-0.35	6.59	
7675.00	1.10	250.60	7476.84	641.75	-1341.21	1486.78	0.00	0.00	0.00	4-1 BHL

Targets

Name	Description Dip.	Dir.	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<---- Latitude ----><--- Longitude --->		
4-1 SL			0.00	0.00	0.00	1369278.863183598.45	40 20 42.693 N	104 50 28.800 W		
4-1 BHL			7476.84	641.75	-1341.21	1369920.613182257.24	40 20 49.132 N	104 50 46.061 W		
4-1 PBHL			7913.00	650.04	-1328.07	1369928.903182270.38	40 20 49.213 N	104 50 45.890 W		
-Circle (Radius: 50)										

Casing Points

MD ft	TVD ft	Diameter in	Hole Size in	Name
930.00	927.13	8.625	9.875	8 5/8"