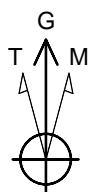


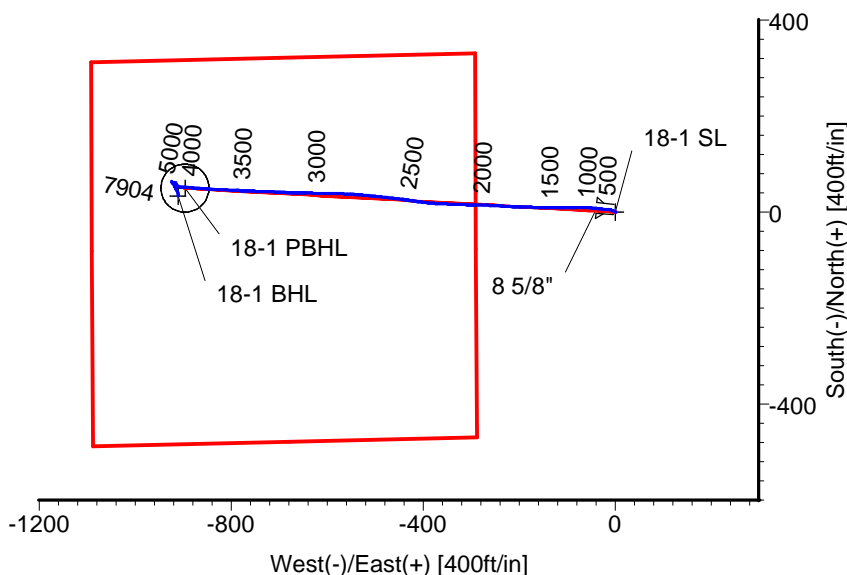
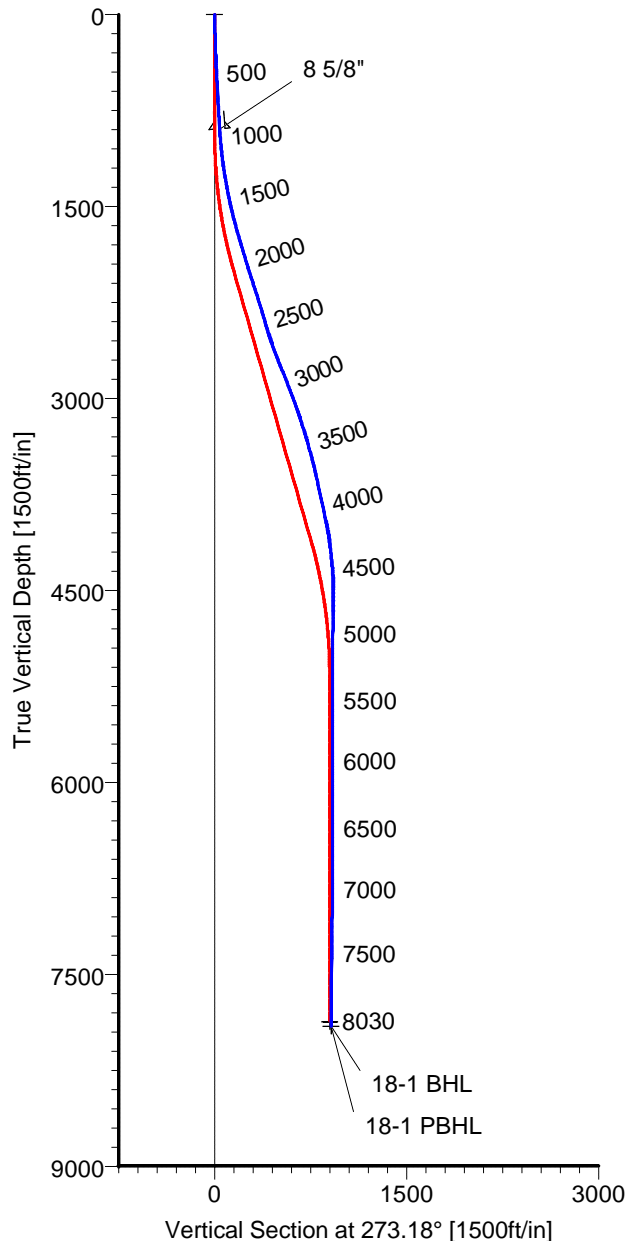
ANADARKO PETROLEUM

Field: Weld County, CO
Site: Bernhardt 3-1 Pad
Well: #18-1
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



CASING DETAILS

No.	TVD	MD	Name	Size
1	894.03	895.00	8 5/8"	8.625

LEGEND

- #18-1, Original Hole, Plan #2
- Original Hole

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
18-1 SL	0.00	0.00	0.00	40°20'42.535N	104°50'28.788W	Point
18-1 PBHL	7872.00	49.77	-896.58	40°20'43.092N	104°50'40.363W	Circle (Radius: 50)
18-1 BHL	7904.39	33.76	-910.48	40°20'42.935N	104°50'40.544W	Point

Wellpath: (#18-1/Original Hole)

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



DIRECTIONAL
DRILLING SERVICES

Allis-Chalmers Energy, Inc.

Survey Report

Company: ANADARKO PETROLEUM				Date: 6/8/2010		Time: 08:18:23		Page: 1	
Field: Weld County, CO				Co-ordinate(NE) Reference: Well: #18-1, Grid North					
Site: Bernhardt 3-1 Pad				Vertical (TVD) Reference: 4826'GL+13'KB 4839.0					
Well: #18-1				Section (VS) Reference: Well (0.00N,0.00E,273.18Azi)					
Wellpath: Original Hole				Survey Calculation Method: Minimum Curvature Db: Adapti					

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: #18-1		Slot Name: 18-1	
Well Position: +N/-S -47.85 ft		Northing: 1369262.91 ft	
+E/-W 3.14 ft		Easting: 3183599.51 ft	
Position Uncertainty: 0.00 ft		Latitude: 40 20 42.535 N	
		Longitude: 104 50 28.788 W	

Wellpath: Original Hole		Drilled From: Surface	
Current Datum: 4826'GL+13'KB		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)		Mag Dip Angle: 67.03 deg	
ft	+N/-S ft	+E/-W ft	Direction deg
0.00	0.00	0.00	273.18

Survey Program for Definitive Wellpath			
Date: 6/8/2010		Validated: No	
Actual From		Version: 0	
To	Survey	Toolcode	Tool Name
ft	ft		
47.00	7985.00	Survey #1 (47.00-7985.00)	MWD
8030.00	8030.00	Survey #2 (8030.00-8030.00)	Std MWD
		Project	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
47.00	0.90	303.70	47.00	0.20	-0.31	0.32	1.91	1.91	0.00	MWD
139.00	1.60	301.90	138.98	1.28	-2.00	2.07	0.76	0.76	-1.96	MWD
199.00	1.80	302.30	198.95	2.23	-3.51	3.62	0.33	0.33	0.67	MWD
259.00	2.30	295.60	258.91	3.25	-5.39	5.56	0.92	0.83	-11.17	MWD
320.00	2.50	292.40	319.86	4.29	-7.72	7.95	0.39	0.33	-5.25	MWD
383.00	2.50	281.90	382.80	5.10	-10.34	10.60	0.73	0.00	-16.67	MWD
473.00	2.80	272.00	472.70	5.58	-14.45	14.74	0.61	0.33	-11.00	MWD
563.00	3.00	270.60	562.59	5.68	-19.01	19.29	0.24	0.22	-1.56	MWD
653.00	3.00	275.20	652.46	5.92	-23.71	24.00	0.27	0.00	5.11	MWD
743.00	3.30	276.60	742.33	6.43	-28.63	28.94	0.34	0.33	1.56	MWD
845.00	3.70	275.50	844.14	7.08	-34.82	35.16	0.40	0.39	-1.08	MWD
895.00	3.70	275.05	894.03	7.38	-38.03	38.38	0.06	0.00	-0.91	8 5/8"
922.00	3.70	274.80	920.98	7.53	-39.77	40.12	0.06	0.00	-0.91	MWD
1012.00	5.30	273.40	1010.70	8.02	-46.81	47.18	1.78	1.78	-1.56	MWD
1102.00	6.70	274.80	1100.20	8.70	-56.19	56.59	1.56	1.56	1.56	MWD
1190.00	8.30	268.50	1187.45	8.97	-67.66	68.05	2.04	1.82	-7.16	MWD
1280.00	9.50	271.00	1276.36	8.93	-81.58	81.95	1.40	1.33	2.78	MWD
1371.00	10.70	269.60	1365.95	9.00	-97.54	97.88	1.35	1.32	-1.54	MWD
1461.00	12.10	270.60	1454.17	9.04	-115.32	115.65	1.57	1.56	1.11	MWD
1551.00	13.70	268.90	1541.90	8.93	-135.41	135.70	1.83	1.78	-1.89	MWD
1641.00	15.00	273.10	1629.09	9.36	-157.70	157.98	1.85	1.44	4.67	MWD

Allis-Chalmers Energy, Inc.

Survey Report

Company: ANADARKO PETROLEUM
Field: Weld County, CO
Site: Bernhardt 3-1 Pad
Well: #18-1
Wellpath: Original Hole

Date: 6/8/2010 **Time:** 08:18:23 **Page:** 2
Co-ordinate(NE) Reference: Well: #18-1, Grid North
Vertical (TVD) Reference: 4826'GL+13'KB 4839.0
Section (VS) Reference: Well (0.00N,0.00E,273.18Azi)
Survey Calculation Method: Minimum Curvature **Db:** Adapti

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
1731.00	15.80	271.00	1715.86	10.20	-181.58	181.87	1.08	0.89	-2.33	MWD
1821.00	16.90	272.40	1802.22	10.96	-206.90	207.19	1.30	1.22	1.56	MWD
1911.00	17.10	273.40	1888.29	12.30	-233.18	233.50	0.39	0.22	1.11	MWD
2002.00	16.90	273.10	1975.31	13.81	-259.74	260.11	0.24	-0.22	-0.33	MWD
2091.00	17.60	270.60	2060.31	14.65	-286.12	286.49	1.15	0.79	-2.81	MWD
2180.00	18.00	272.40	2145.05	15.36	-313.31	313.68	0.76	0.45	2.02	MWD
2271.00	17.10	271.70	2231.81	16.35	-340.73	341.12	1.02	-0.99	-0.77	MWD
2361.00	17.10	273.10	2317.83	17.46	-367.17	367.57	0.46	0.00	1.56	MWD
2451.00	16.20	275.90	2404.06	19.46	-392.87	393.35	1.34	-1.00	3.11	MWD
2541.00	17.20	279.10	2490.26	22.86	-418.50	419.13	1.51	1.11	3.56	MWD
2631.00	19.70	277.00	2575.63	26.81	-446.70	447.50	2.87	2.78	-2.33	MWD
2721.00	20.90	276.30	2660.04	30.42	-477.72	478.67	1.36	1.33	-0.78	MWD
2812.00	22.40	275.90	2744.62	33.99	-511.10	512.20	1.66	1.65	-0.44	MWD
2902.00	21.80	273.80	2828.01	36.86	-544.83	546.04	1.10	-0.67	-2.33	MWD
2992.00	21.10	272.00	2911.77	38.53	-577.70	578.94	1.07	-0.78	-2.00	MWD
3083.00	20.40	270.30	2996.87	39.18	-609.93	611.16	1.01	-0.77	-1.87	MWD
3174.00	19.40	270.60	3082.44	39.42	-640.90	642.10	1.10	-1.10	0.33	MWD
3264.00	17.40	271.70	3167.83	39.98	-669.30	670.49	2.26	-2.22	1.22	MWD
3354.00	17.80	273.40	3253.62	41.20	-696.48	697.70	0.72	0.44	1.89	MWD
3444.00	15.80	272.00	3339.77	42.44	-722.46	723.71	2.27	-2.22	-1.56	MWD
3534.00	15.50	271.70	3426.44	43.22	-746.73	747.98	0.35	-0.33	-0.33	MWD
3625.00	14.10	272.40	3514.42	44.05	-769.96	771.22	1.55	-1.54	0.77	MWD
3715.00	12.50	273.40	3602.00	45.09	-790.64	791.92	1.80	-1.78	1.11	MWD
3805.00	12.10	273.10	3689.93	46.17	-809.78	811.09	0.45	-0.44	-0.33	MWD
3895.00	12.10	273.10	3777.93	47.19	-828.62	829.96	0.00	0.00	0.00	MWD
3984.00	12.10	273.10	3864.96	48.20	-847.24	848.61	0.00	0.00	0.00	MWD
4073.00	12.10	272.70	3951.98	49.15	-865.88	867.27	0.09	0.00	-0.45	MWD
4163.00	9.90	275.50	4040.32	50.33	-883.00	884.44	2.51	-2.44	3.11	MWD
4252.00	7.40	273.10	4128.30	51.38	-896.34	897.81	2.84	-2.81	-2.70	MWD
4342.00	6.00	281.20	4217.69	52.60	-906.75	908.27	1.87	-1.56	9.00	MWD
4432.00	5.60	296.30	4307.23	55.46	-915.30	916.96	1.75	-0.44	16.78	MWD
4523.00	3.50	305.10	4397.94	59.03	-921.55	923.41	2.43	-2.31	9.67	MWD
4613.00	2.10	349.00	4487.84	62.23	-924.11	926.14	2.74	-1.56	48.78	MWD
4703.00	0.20	284.70	4577.82	63.88	-924.58	926.70	2.25	-2.11	-71.44	MWD
4792.00	1.80	124.70	4666.81	63.13	-923.58	925.66	2.23	1.80	-179.78	MWD
4883.00	1.20	119.10	4757.77	61.85	-921.57	923.59	0.68	-0.66	-6.15	MWD
4973.00	1.10	115.60	4847.76	61.02	-919.97	921.94	0.14	-0.11	-3.89	MWD
5151.00	0.70	120.50	5025.73	59.73	-917.49	919.39	0.23	-0.22	2.75	MWD
5330.00	0.20	138.40	5204.73	58.94	-916.34	918.20	0.29	-0.28	10.00	MWD
5521.00	0.30	196.80	5395.73	58.21	-916.27	918.09	0.14	0.05	30.58	MWD
5691.00	0.70	16.10	5565.72	58.78	-916.11	917.96	0.59	0.24	105.47	MWD
5870.00	0.50	1.30	5744.71	60.62	-915.79	917.74	0.14	-0.11	-8.27	MWD
6051.00	0.70	293.50	5925.71	61.85	-916.78	918.80	0.38	0.11	-37.46	MWD
6231.00	0.40	139.80	6105.70	61.80	-917.39	919.40	0.60	-0.17	-85.39	MWD
6411.00	0.20	157.80	6285.70	61.03	-916.86	918.84	0.12	-0.11	10.00	MWD
6591.00	0.50	218.20	6465.70	60.13	-917.23	919.15	0.24	0.17	33.56	MWD
6772.00	0.90	198.90	6646.68	58.16	-918.18	919.99	0.25	0.22	-10.66	MWD
6950.00	1.10	175.40	6824.66	55.13	-918.49	920.14	0.25	0.11	-13.20	MWD
7131.00	1.60	143.00	7005.61	51.38	-916.83	918.27	0.49	0.28	-17.90	MWD
7311.00	1.80	159.50	7185.53	46.73	-914.33	915.51	0.29	0.11	9.17	MWD
7492.00	1.20	145.80	7366.47	42.50	-912.27	913.22	0.38	-0.33	-7.57	MWD
7671.00	1.20	160.90	7545.43	39.18	-910.60	911.37	0.18	0.00	8.44	MWD
7852.00	0.70	184.50	7726.40	36.29	-910.07	910.68	0.35	-0.28	13.04	MWD

Allis-Chalmers Energy, Inc.

Survey Report

Company: ANADARKO PETROLEUM Field: Weld County, CO Site: Bernhardt 3-1 Pad Well: #18-1 Wellpath: Original Hole	Date: 6/8/2010 Time: 08:18:23 Page: 3 Co-ordinate(NE) Reference: Well: #18-1, Grid North Vertical (TVD) Reference: 4826'GL+13'KB 4839.0 Section (VS) Reference: Well (0.00N,0.00E,273.18Azi) Survey Calculation Method: Minimum Curvature Db: Adapti
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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
7985.00	0.90	191.50	7859.39	34.45	-910.34	910.85	0.17	0.15	5.26	MWD
7997.61	0.90	191.50	7872.00	34.26	-910.38	910.88	0.00	0.00	0.00	18-1 PBHL
8030.00	0.90	191.50	7904.39	33.76	-910.48	910.95	0.00	0.00	0.00	18-1 BHL

Targets

Name	Description Dip. Dir.	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<---- Latitude ----><--- Longitude --->			
18-1 SL		0.00	0.00	0.00	1369262.913183599.51	40 20 42.535 N	104 50 28.788 W			
18-1 PBHL		7872.00	49.77	-896.58	1369312.683182702.93	40 20 43.092 N	104 50 40.363 W			
-Circle (Radius: 50)										
18-1 BHL		7904.39	33.76	-910.48	1369296.673182689.03	40 20 42.935 N	104 50 40.544 W			

Casing Points

MD ft	TVD ft	Diameter in	Hole Size in	Name
895.00	894.03	8.625	9.875	8 5/8"