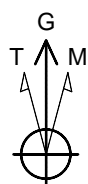
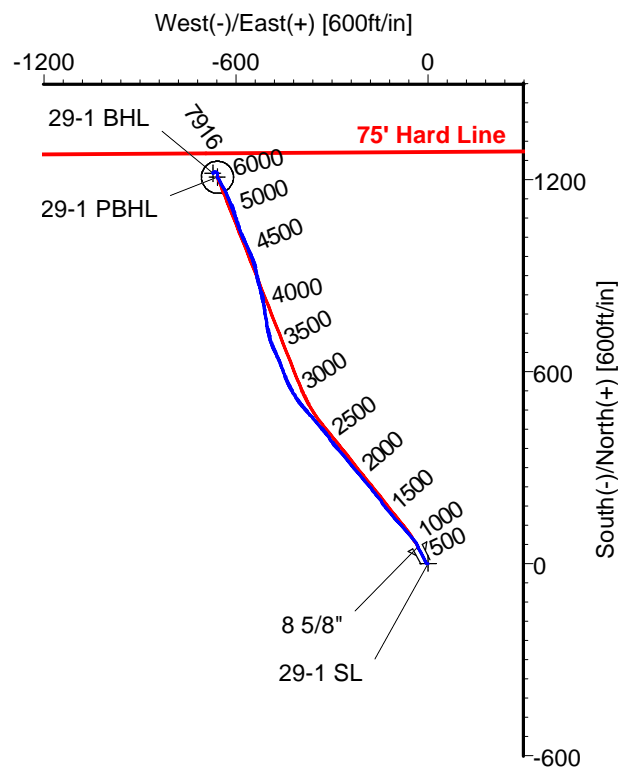
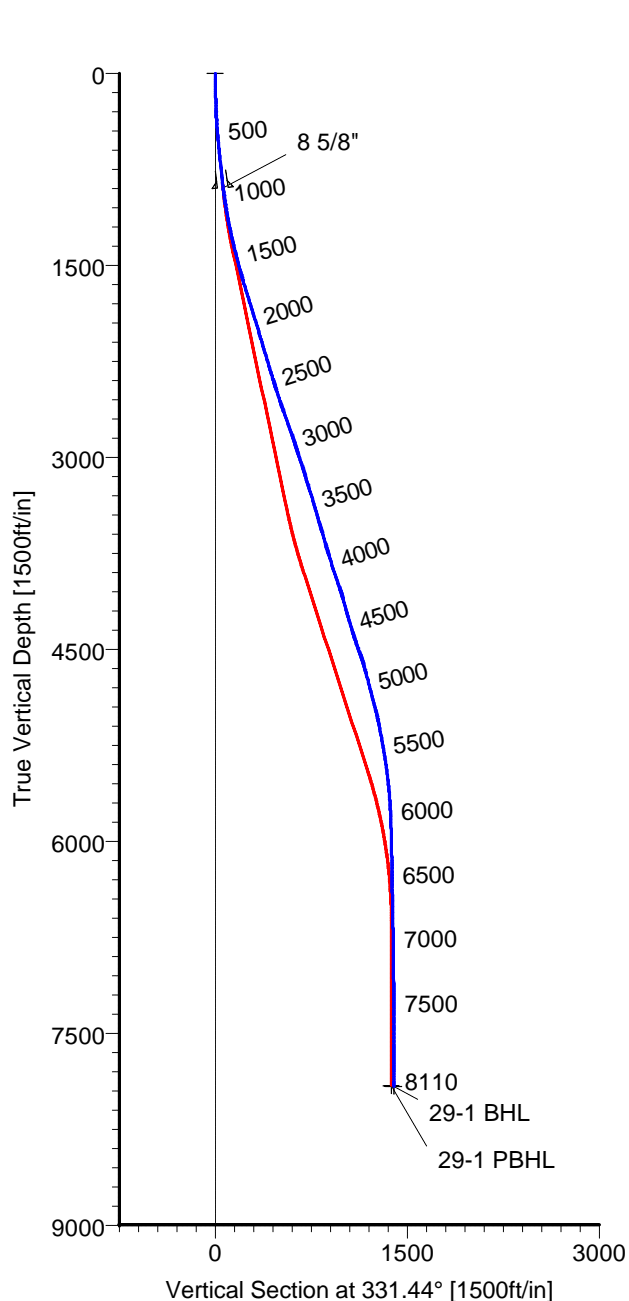


ANADARKO PETROLEUM

Field: Weld County, CO
Site: Bernhardt 3-1 Pad
Well: #29-1
Wellpath: Original Hole



Azimuths to Grid North
True North: -0.43°
Magnetic North: 8.61°

Magnetic Field
Strength: 53239nT
Dip Angle: 67.03°
Date: 06/18/2010
Model: IGRF2010

CASING DETAILS

No.	TVD	MD	Name	Size
1	897.24	900.00	8 5/8"	8.625

LEGEND

- #29-1, Original Hole, Plan #3
- Original Hole

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
29-1 SL	0.00	0.00	0.00	40°20'43.008N	104°50'28.824W	Point
29-1 PBHL	7908.00	1207.62	-657.32	40°20'54.990N	104°50'37.198W	Circle (Radius: 50)
29-1 BHL	7915.70	1220.31	-671.16	40°20'55.116N	104°50'37.375W	Point

Wellpath: (#29-1/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: 06/20/2010



DIRECTIONAL
DRILLING SERVICES

Allis-Chalmers Energy, Inc.

Survey Report

Company: ANADARKO PETROLEUM		Date: 06/20/2010	Time: 09:50:39	Page: 1
Field: Weld County, CO		Co-ordinate(N/E) Reference: Well: #29-1, Grid North		
Site: Bernhardt 3-1 Pad		Vertical (TVD) Reference: 4826'GL+13'KB 4839.0		
Well: #29-1		Section (VS) Reference: Well (0.00N,0.00E,331.44Azi)		
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
From: Geographic	Easting: 3183596.38 ft
Position Uncertainty: 0.00 ft	Latitude: 40 20 43.008 N
Ground Level: 4826.00 ft	Longitude: 104 50 28.824 W
	North Reference: Grid
	Grid Convergence: 0.43 deg

Well: #29-1	Slot Name: 29-1
Well Position: +N/-S 0.00 ft	Latitude: 40 20 43.008 N
+E/-W 0.00 ft	Longitude: 104 50 28.824 W
Position Uncertainty: 0.00 ft	

Wellpath: Original Hole	Drilled From: Surface
Current Datum: 4826'GL+13'KB	Tie-on Depth: 0.00 ft
Magnetic Data: 06/18/2010	Above System Datum: Mean Sea Level
Field Strength: 53239 nT	Declination: 9.04 deg
Vertical Section: Depth From (TVD)	Mag Dip Angle: 67.03 deg
ft	+N/-S
	+E/-W
	Direction
	deg
0.00	0.00
0.00	0.00
0.00	331.44

Survey Program for Definitive Wellpath		Version: 2
Date: 06/20/2010	Validated: No	Toolcode
Actual From	To	Tool Name
ft	ft	
46.00	8065.00	Survey #1 (46.00-8065.00)
8110.00	8110.00	Survey #2 (8110.00-8110.00)
		MWD
		MWD

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
46.00	0.70	294.90	46.00	0.12	-0.25	0.23	1.52	1.52	0.00	MWD
169.00	1.40	288.50	168.98	0.91	-2.36	1.93	0.58	0.57	-5.20	MWD
289.00	1.90	320.20	288.93	2.90	-5.02	4.95	0.85	0.42	26.42	MWD
428.00	4.90	336.40	427.67	10.12	-8.88	13.13	2.25	2.16	11.65	MWD
561.00	5.50	333.20	560.12	21.01	-14.03	25.16	0.50	0.45	-2.41	MWD
696.00	6.20	331.40	694.42	33.19	-20.43	38.92	0.54	0.52	-1.33	MWD
850.00	6.00	333.20	847.55	47.67	-28.04	55.28	0.18	-0.13	1.17	MWD
900.00	6.65	332.67	897.24	52.58	-30.55	60.78	1.31	1.30	-1.05	8 5/8"
919.00	6.90	332.50	916.11	54.57	-31.58	63.03	1.31	1.30	-0.92	MWD
1009.00	8.90	326.20	1005.25	65.15	-37.95	75.37	2.42	2.22	-7.00	MWD
1098.00	10.60	320.50	1092.97	77.19	-46.99	90.26	2.19	1.91	-6.40	MWD
1188.00	11.80	322.00	1181.25	90.83	-57.92	107.47	1.37	1.33	1.67	MWD
1279.00	12.70	317.70	1270.18	105.56	-70.38	126.36	1.41	0.99	-4.73	MWD
1369.00	14.40	318.10	1357.67	121.21	-84.51	146.86	1.89	1.89	0.44	MWD
1459.00	15.00	316.30	1444.73	137.96	-100.04	168.99	0.84	0.67	-2.00	MWD
1549.00	15.00	320.20	1531.66	155.33	-115.54	191.66	1.12	0.00	4.33	MWD
1638.00	16.80	323.70	1617.26	174.54	-130.53	215.71	2.29	2.02	3.93	MWD
1727.00	17.10	323.40	1702.39	195.41	-145.94	241.41	0.35	0.34	-0.34	MWD
1816.00	17.20	321.00	1787.43	216.14	-162.02	267.30	0.80	0.11	-2.70	MWD
1905.00	18.10	321.30	1872.24	237.16	-178.95	293.85	1.02	1.01	0.34	MWD
1995.00	17.40	319.10	1957.96	258.24	-196.50	320.76	1.08	-0.78	-2.44	MWD

Allis-Chalmers Energy, Inc.

Survey Report

Company: ANADARKO PETROLEUM	Date: 06/20/2010	Time: 09:50:39	Page: 2
Field: Weld County, CO	Co-ordinate(NE) Reference: Well: #29-1, Grid North		
Site: Bernhardt 3-1 Pad	Vertical (TVD) Reference: 4826'GL+13'KB 4839.0		
Well: #29-1	Section (VS) Reference: Well (0.00N,0.00E,331.44Azi)		
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
2085.00	16.90	318.80	2043.96	278.26	-213.93	346.67	0.56	-0.56	-0.33	MWD
2175.00	16.50	321.30	2130.16	298.08	-230.54	372.02	0.91	-0.44	2.78	MWD
2265.00	17.40	321.60	2216.25	318.60	-246.89	397.86	1.00	1.00	0.33	MWD
2355.00	16.60	318.80	2302.32	338.82	-263.72	423.66	1.27	-0.89	-3.11	MWD
2445.00	17.10	317.00	2388.46	358.17	-281.21	449.02	0.80	0.56	-2.00	MWD
2535.00	18.70	324.80	2474.11	379.64	-298.55	476.17	3.20	1.78	8.67	MWD
2626.00	18.10	322.70	2560.46	402.80	-315.53	504.64	0.98	-0.66	-2.31	MWD
2716.00	20.20	319.10	2645.48	425.67	-334.18	533.64	2.68	2.33	-4.00	MWD
2806.00	20.80	319.10	2729.78	449.50	-354.81	564.43	0.67	0.67	0.00	MWD
2894.00	19.70	318.80	2812.34	472.47	-374.81	594.17	1.26	-1.25	-0.34	MWD
2984.00	17.40	319.80	2897.65	494.16	-393.49	622.15	2.58	-2.56	1.11	MWD
3074.00	19.00	326.90	2983.16	516.72	-410.18	649.94	3.04	1.78	7.89	MWD
3164.00	18.10	330.00	3068.48	541.10	-425.17	678.52	1.48	-1.00	3.44	MWD
3254.00	16.40	335.30	3154.44	564.75	-437.48	705.18	2.57	-1.89	5.89	MWD
3345.00	17.40	340.20	3241.51	589.23	-447.45	731.45	1.91	1.10	5.38	MWD
3435.00	17.40	339.50	3327.39	614.49	-456.72	758.07	0.23	0.00	-0.78	MWD
3525.00	16.40	336.70	3413.51	638.77	-466.46	784.05	1.43	-1.11	-3.11	MWD
3615.00	15.80	332.20	3499.98	661.28	-477.20	808.95	1.54	-0.67	-5.00	MWD
3706.00	16.40	340.20	3587.42	684.33	-487.33	834.04	2.52	0.66	8.79	MWD
3796.00	16.40	345.20	3673.76	708.56	-494.88	858.94	1.57	0.00	5.56	MWD
3887.00	18.80	350.80	3760.50	735.47	-500.51	885.26	3.22	2.64	6.15	MWD
3976.00	19.00	351.10	3844.71	763.93	-505.05	912.43	0.25	0.22	0.34	MWD
4065.00	18.80	350.80	3928.91	792.40	-509.58	939.60	0.25	-0.22	-0.34	MWD
4156.00	19.70	348.00	4014.82	821.88	-515.11	968.14	1.42	0.99	-3.08	MWD
4246.00	16.50	345.90	4100.36	849.12	-521.38	995.06	3.63	-3.56	-2.33	MWD
4336.00	16.50	343.80	4186.65	873.79	-528.06	1019.92	0.66	0.00	-2.33	MWD
4426.00	17.10	350.10	4272.82	899.10	-533.90	1044.95	2.13	0.67	7.00	MWD
4517.00	17.20	345.90	4359.77	925.33	-539.48	1070.65	1.37	0.11	-4.62	MWD
4607.00	18.80	339.20	4445.38	951.80	-547.87	1097.91	2.90	1.78	-7.44	MWD
4697.00	20.20	335.00	4530.22	979.44	-559.59	1127.79	2.20	1.56	-4.67	MWD
4788.00	16.70	335.00	4616.53	1005.54	-571.76	1156.53	3.85	-3.85	0.00	MWD
4878.00	15.10	339.50	4703.08	1028.24	-581.33	1181.05	2.24	-1.78	5.00	MWD
4968.00	14.60	339.20	4790.08	1049.83	-589.47	1203.89	0.56	-0.56	-0.33	MWD
5059.00	15.60	342.00	4877.93	1072.19	-597.32	1227.29	1.36	1.10	3.08	MWD
5149.00	14.30	341.30	4964.89	1094.22	-604.62	1250.13	1.46	-1.44	-0.78	MWD
5285.00	11.00	338.10	5097.57	1122.18	-614.85	1279.58	2.48	-2.43	-2.35	MWD
5420.00	10.40	337.80	5230.22	1145.41	-624.26	1304.48	0.45	-0.44	-0.22	MWD
5555.00	8.60	333.20	5363.37	1165.71	-633.42	1326.68	1.45	-1.33	-3.41	MWD
5691.00	7.10	331.40	5498.09	1182.16	-642.02	1345.25	1.12	-1.10	-1.32	MWD
5827.00	4.80	326.20	5633.35	1194.27	-649.21	1359.32	1.74	-1.69	-3.82	MWD
5962.00	2.50	328.30	5768.06	1201.47	-653.90	1367.89	1.71	-1.70	1.56	MWD
6097.00	1.50	332.50	5902.98	1205.54	-656.27	1372.60	0.75	-0.74	3.11	MWD
6231.00	1.50	350.80	6036.93	1208.83	-657.36	1376.00	0.36	0.00	13.66	MWD
6366.00	0.80	9.80	6171.91	1211.50	-657.48	1378.41	0.58	-0.52	14.07	MWD
6544.00	1.50	11.90	6349.87	1215.01	-656.79	1381.16	0.39	0.39	1.18	MWD
6725.00	1.20	343.40	6530.82	1219.14	-656.84	1384.81	0.40	-0.17	-15.75	MWD
6906.00	0.90	305.80	6711.79	1221.79	-658.53	1387.95	0.41	-0.17	-20.77	MWD
7086.00	1.10	290.30	6891.77	1223.22	-661.30	1390.53	0.19	0.11	-8.61	MWD
7266.00	0.90	269.60	7071.74	1223.81	-664.34	1392.49	0.23	-0.11	-11.50	MWD
7445.00	0.50	254.80	7250.73	1223.59	-666.50	1393.34	0.24	-0.22	-8.27	MWD
7624.00	0.30	271.30	7429.72	1223.40	-667.72	1393.75	0.13	-0.11	9.22	MWD
7804.00	0.70	229.10	7609.71	1222.69	-669.02	1393.75	0.29	0.22	-23.44	MWD
7983.00	0.50	204.50	7788.70	1221.26	-670.17	1393.05	0.18	-0.11	-13.74	MWD

Allis-Chalmers Energy, Inc.

Survey Report

Company: ANADARKO PETROLEUM Field: Weld County, CO Site: Bernhardt 3-1 Pad Well: #29-1 Wellpath: Original Hole	Date: 06/20/2010 Time: 09:50:39 Page: 3 Co-ordinate(NE) Reference: Well: #29-1, Grid North Vertical (TVD) Reference: 4826'GL+13'KB 4839.0 Section (VS) Reference: Well (0.00N,0.00E,331.44Azi) 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
8065.00	0.70	233.70	7870.70	1220.64	-670.72	1392.77	0.44	0.24	35.61	MWD
8102.30	0.70	233.70	7908.00	1220.37	-671.09	1392.70	0.00	0.00	0.00	29-1 PBHL
8110.00	0.70	233.70	7915.70	1220.31	-671.16	1392.69	0.00	0.00	0.00	29-1 BHL

Targets

Name	Description Dip. Dir.	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<---- Latitude ----><--- Longitude --->		
29-1 SL		0.00	0.00	0.00	1369310.763183596.38		40	20	43.008 N
29-1 PBHL		7908.00	1207.62	-657.32	1370518.373182939.06		40	20	54.990 N
-Circle (Radius: 50)									
29-1 BHL		7915.70	1220.31	-671.16	1370531.073182925.22		40	20	55.116 N

Casing Points

MD ft	TVD ft	Diameter in	Hole Size in	Name
900.00	897.24	8.625	9.875	8 5/8"