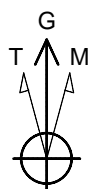


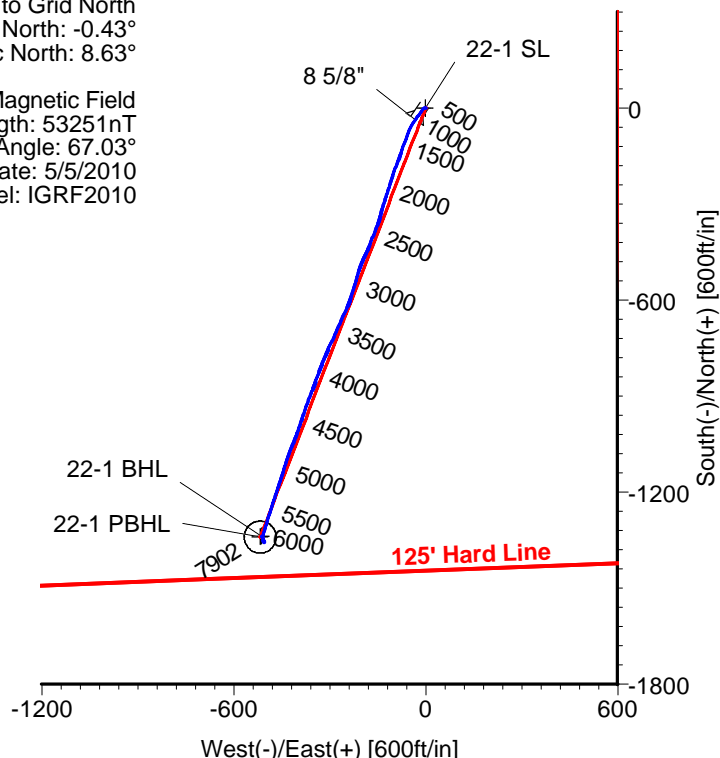
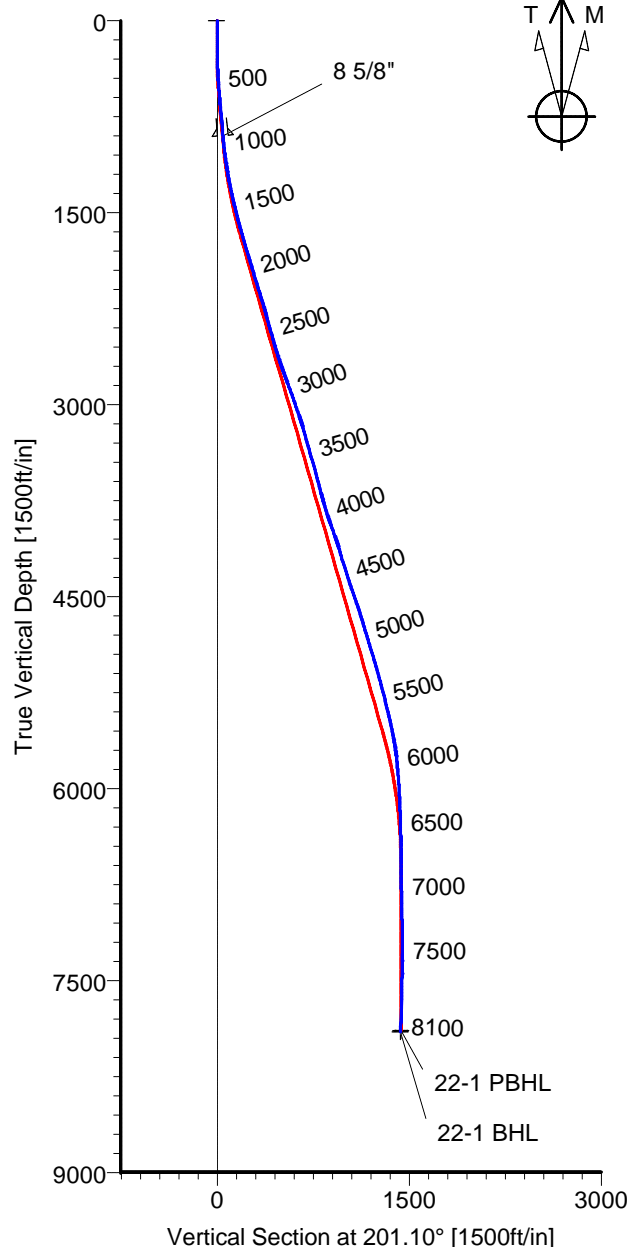
ANADARKO PETROLEUM

Field: Weld County, CO
Site: Bernhardt 3-1 Pad
Well: #22-1
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	898.16	900.00	8 5/8"	8.625

LEGEND

- #22-1, Original Hole, Plan #1
- Original Hole

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
22-1 SL	0.00	0.00	0.00	40°20'42.061N	104°50'28.752W	Point
22-1 PBHL	7892.00	-1340.77	-517.36	40°20'28.850N	104°50'35.562W	Circle (Radius: 50)
22-1 BHL	7901.99	-1337.80	-513.22	40°20'28.879N	104°50'35.509W	Point

Wellpath: (#22-1/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: 5/27/2010	Time: 10:32:00	Page: 1
Field: Weld County, CO		Co-ordinate(NE) Reference: Well: #22-1, Grid North		
Site: Bernhardt 3-1 Pad		Vertical (TVD) Reference: 4826'GL+13'KB 4839.0		
Well: #22-1		Section (VS) Reference: Well (0.00N,0.00E,201.10Azi)		
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
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: #22-1	Slot Name: 22-1
Well Position: +N/-S -95.74 ft	Latitude: 40 20 42.061 N
+E/-W 6.25 ft	Longitude: 104 50 28.752 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: 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
	+E/-W
	Direction
	deg
0.00	0.00
0.00	0.00
0.00	201.10

Survey Program for Definitive Wellpath		Version: 0
Date: 5/27/2010	Validated: No	Toolcode
Actual From	To	Tool Name
ft	ft	
47.00	8055.00	Survey #1 (47.00-8055.00)
8100.00	8100.00	Survey #2 (8100.00-8100.00)
		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
47.00	0.30	210.10	47.00	-0.11	-0.06	0.12	0.64	0.64	0.00	MWD
108.00	0.70	271.10	108.00	-0.24	-0.51	0.41	1.01	0.66	100.00	MWD
169.00	1.10	272.00	168.99	-0.21	-1.47	0.73	0.66	0.66	1.48	MWD
229.00	1.20	256.90	228.98	-0.33	-2.66	1.27	0.53	0.17	-25.17	MWD
289.00	1.80	252.00	288.96	-0.77	-4.17	2.21	1.02	1.00	-8.17	MWD
350.00	2.50	236.50	349.91	-1.80	-6.19	3.90	1.48	1.15	-25.41	MWD
426.00	3.70	219.70	425.80	-4.60	-9.14	7.58	1.96	1.58	-22.11	MWD
519.00	4.10	217.50	518.59	-9.54	-13.08	13.61	0.46	0.43	-2.37	MWD
607.00	4.90	213.30	606.32	-15.18	-17.06	20.30	0.98	0.91	-4.77	MWD
698.00	5.10	217.20	696.97	-21.65	-21.64	27.99	0.43	0.22	4.29	MWD
788.00	5.10	216.80	786.61	-28.04	-26.45	35.68	0.04	0.00	-0.44	MWD
850.00	5.10	218.60	848.37	-32.40	-29.82	40.96	0.26	0.00	2.90	MWD
900.00	5.45	213.98	898.16	-36.11	-32.53	45.40	1.10	0.70	-9.24	8 5/8"
920.00	5.60	212.30	918.06	-37.72	-33.59	47.28	1.10	0.75	-8.41	MWD
1010.00	6.90	210.00	1007.53	-46.11	-38.64	56.93	1.47	1.44	-2.56	MWD
1100.00	7.90	205.60	1096.78	-56.37	-44.01	68.44	1.28	1.11	-4.89	MWD
1190.00	10.00	207.30	1185.68	-68.90	-50.27	82.37	2.35	2.33	1.89	MWD
1279.00	11.30	201.00	1273.14	-83.91	-56.94	98.78	1.96	1.46	-7.08	MWD
1370.00	12.20	201.40	1362.24	-101.18	-63.64	117.31	0.99	0.99	0.44	MWD
1460.00	13.60	197.90	1449.96	-120.11	-70.36	137.38	1.78	1.56	-3.89	MWD
1550.00	14.30	199.30	1537.31	-140.67	-77.29	159.06	0.86	0.78	1.56	MWD

Allis-Chalmers Energy, Inc.

Survey Report

Company: ANADARKO PETROLEUM

Field: Weld County, CO

Site: Bernhardt 3-1 Pad

Well: #22-1

Wellpath: Original Hole

Date: 5/27/2010

Time: 10:32:00

Page: 2

Co-ordinate(NE) Reference: Well: #22-1, Grid North

Vertical (TVD) Reference: 4826'GL+13'KB 4839.0

Section (VS) Reference: Well (0.00N,0.00E,201.10Azi)

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
1641.00	15.80	200.70	1625.19	-162.86	-85.38	182.68	1.70	1.65	1.54	MWD
1731.00	16.50	199.60	1711.63	-186.36	-94.00	207.71	0.85	0.78	-1.22	MWD
1821.00	16.50	200.00	1797.93	-210.41	-102.66	233.27	0.13	0.00	0.44	MWD
1911.00	17.10	196.10	1884.09	-235.14	-110.70	259.23	1.42	0.67	-4.33	MWD
2002.00	16.50	197.20	1971.20	-260.34	-118.23	285.45	0.75	-0.66	1.21	MWD
2092.00	16.90	198.60	2057.41	-284.95	-126.19	311.27	0.63	0.44	1.56	MWD
2183.00	17.80	197.20	2144.27	-310.77	-134.52	338.36	1.09	0.99	-1.54	MWD
2273.00	16.40	194.00	2230.29	-336.24	-141.66	364.69	1.87	-1.56	-3.56	MWD
2364.00	14.80	199.30	2317.94	-359.68	-148.61	389.06	2.35	-1.76	5.82	MWD
2454.00	15.70	202.10	2404.77	-381.81	-156.99	412.73	1.29	1.00	3.11	MWD
2545.00	15.80	201.00	2492.35	-404.78	-166.06	437.43	0.35	0.11	-1.21	MWD
2635.00	17.62	201.00	2578.55	-428.94	-175.34	463.30	2.02	2.02	0.00	MWD
2726.00	18.30	207.00	2665.12	-454.53	-186.76	491.29	2.16	0.75	6.59	MWD
2814.00	20.10	203.10	2748.23	-480.75	-198.97	520.15	2.51	2.05	-4.43	MWD
2904.00	20.40	196.40	2832.68	-510.03	-209.46	551.24	2.60	0.33	-7.44	MWD
2994.00	19.70	195.70	2917.22	-539.68	-218.00	581.98	0.82	-0.78	-0.78	MWD
3083.00	19.40	198.20	3001.09	-568.16	-226.67	611.67	1.00	-0.34	2.81	MWD
3172.00	18.70	196.80	3085.22	-595.87	-235.41	640.66	0.94	-0.79	-1.57	MWD
3262.00	16.20	204.50	3171.08	-621.11	-244.79	667.59	3.78	-2.78	8.56	MWD
3351.00	16.20	205.20	3256.55	-643.64	-255.23	692.37	0.22	0.00	0.79	MWD
3440.00	15.50	203.10	3342.16	-665.81	-265.18	716.64	1.02	-0.79	-2.36	MWD
3530.00	15.80	202.40	3428.83	-688.20	-274.57	740.90	0.39	0.33	-0.78	MWD
3621.00	15.80	204.20	3516.39	-710.96	-284.37	765.66	0.54	0.00	1.98	MWD
3710.00	15.10	205.90	3602.17	-732.44	-294.40	789.31	0.94	-0.79	1.91	MWD
3800.00	14.10	204.20	3689.27	-752.98	-304.01	811.94	1.21	-1.11	-1.89	MWD
3888.00	16.40	203.50	3774.16	-774.15	-313.36	835.06	2.62	2.61	-0.80	MWD
3977.00	17.80	202.10	3859.22	-798.28	-323.49	861.21	1.64	1.57	-1.57	MWD
4067.00	20.10	199.60	3944.34	-825.60	-333.85	890.43	2.71	2.56	-2.78	MWD
4158.00	19.70	199.60	4029.91	-854.78	-344.24	921.40	0.44	-0.44	0.00	MWD
4246.00	16.50	201.70	4113.54	-880.37	-353.84	948.73	3.71	-3.64	2.39	MWD
4335.00	17.10	200.00	4198.75	-904.41	-362.99	974.45	0.87	0.67	-1.91	MWD
4425.00	17.60	199.60	4284.65	-929.66	-372.08	1001.28	0.57	0.56	-0.44	MWD
4515.00	17.60	199.30	4370.44	-955.32	-381.14	1028.48	0.10	0.00	-0.33	MWD
4606.00	19.00	198.90	4456.83	-982.32	-390.49	1057.04	1.54	1.54	-0.44	MWD
4696.00	19.20	198.60	4541.88	-1010.21	-399.95	1086.46	0.25	0.22	-0.33	MWD
4786.00	18.00	202.10	4627.18	-1037.12	-409.91	1115.15	1.82	-1.33	3.89	MWD
4876.00	16.50	202.50	4713.13	-1061.81	-420.03	1141.83	1.67	-1.67	0.44	MWD
4966.00	17.10	199.30	4799.29	-1086.11	-429.29	1167.84	1.22	0.67	-3.56	MWD
5057.00	16.70	197.20	4886.36	-1111.23	-437.58	1194.25	0.80	-0.44	-2.31	MWD
5147.00	16.90	196.80	4972.52	-1136.10	-445.19	1220.20	0.26	0.22	-0.44	MWD
5237.00	15.90	198.60	5058.86	-1160.31	-452.90	1245.56	1.25	-1.11	2.00	MWD
5327.00	15.10	198.20	5145.58	-1183.13	-460.50	1269.59	0.90	-0.89	-0.44	MWD
5416.00	14.40	198.60	5231.65	-1204.64	-467.65	1292.22	0.79	-0.79	0.45	MWD
5507.00	14.20	196.80	5319.83	-1226.04	-474.48	1314.65	0.54	-0.22	-1.98	MWD
5597.00	13.70	199.60	5407.18	-1246.65	-481.25	1336.32	0.93	-0.56	3.11	MWD
5687.00	12.20	199.30	5494.88	-1265.67	-487.97	1356.48	1.67	-1.67	-0.33	MWD
5777.00	11.00	197.50	5583.04	-1282.83	-493.69	1374.55	1.39	-1.33	-2.00	MWD
5865.00	9.00	193.60	5669.70	-1297.53	-497.83	1389.76	2.40	-2.27	-4.43	MWD
5954.00	6.60	197.20	5757.87	-1309.19	-500.98	1401.76	2.75	-2.70	4.04	MWD
6045.00	4.90	199.30	5848.41	-1317.85	-503.82	1410.87	1.88	-1.87	2.31	MWD
6225.00	3.20	188.70	6027.96	-1330.07	-507.12	1423.46	1.03	-0.94	-5.89	MWD
6405.00	1.90	185.20	6207.78	-1338.01	-508.15	1431.23	0.73	-0.72	-1.94	MWD
6583.00	0.80	184.50	6385.73	-1342.19	-508.51	1435.26	0.62	-0.62	-0.39	MWD

Allis-Chalmers Energy, Inc.

Survey Report

Company: ANADARKO PETROLEUM Field: Weld County, CO Site: Bernhardt 3-1 Pad Well: #22-1 Wellpath: Original Hole	Date: 5/27/2010 Time: 10:32:00 Page: 3 Co-ordinate(NE) Reference: Well: #22-1, Grid North Vertical (TVD) Reference: 4826'GL+13'KB 4839.0 Section (VS) Reference: Well (0.00N,0.00E,201.10Azi) 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
6764.00	0.50	214.40	6566.71	-1344.10	-509.06	1437.24	0.24	-0.17	16.52	MWD
6945.00	0.90	178.90	6747.70	-1346.17	-509.48	1439.33	0.32	0.22	-19.61	MWD
7124.00	1.40	186.60	6926.67	-1349.75	-509.70	1442.75	0.29	0.28	4.30	MWD
7302.00	1.80	146.90	7104.60	-1354.25	-508.42	1446.49	0.65	0.22	-22.30	MWD
7483.00	1.80	110.30	7285.52	-1357.62	-504.21	1448.11	0.62	0.00	-20.22	MWD
7664.00	2.30	335.70	7466.47	-1355.30	-503.03	1445.52	2.09	0.28	-74.36	MWD
7844.00	2.80	325.80	7646.29	-1348.37	-506.99	1440.48	0.37	0.28	-5.50	MWD
8021.00	2.80	333.20	7823.08	-1340.93	-511.37	1435.12	0.20	0.00	4.18	MWD
8055.00	2.60	328.30	7857.04	-1339.54	-512.15	1434.10	0.90	-0.59	-14.41	MWD
8090.00	2.60	328.30	7892.00	-1338.19	-512.98	1433.14	0.00	0.00	0.00	22-1 PBHL
8100.00	2.60	328.30	7901.99	-1337.80	-513.22	1432.86	0.00	0.00	0.00	22-1 BHL

Targets

Name	Description Dip. Dir.	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<---- Latitude ----><--- Longitude --->		
22-1 SL		0.00	0.00	0.00	1369215.023183602.63	40 20 42.061 N	104 50 28.752 W		
22-1 PBHL		7892.00	-1340.77	-517.36	1367874.263183085.27	40 20 28.850 N	104 50 35.562 W		
-Circle (Radius: 50)									
22-1 BHL		7901.99	-1337.80	-513.22	1367877.223183089.41	40 20 28.879 N	104 50 35.509 W		

Casing Points

MD ft	TVD ft	Diameter in	Hole Size in	Name
900.00	898.16	8.625	9.875	8 5/8"