

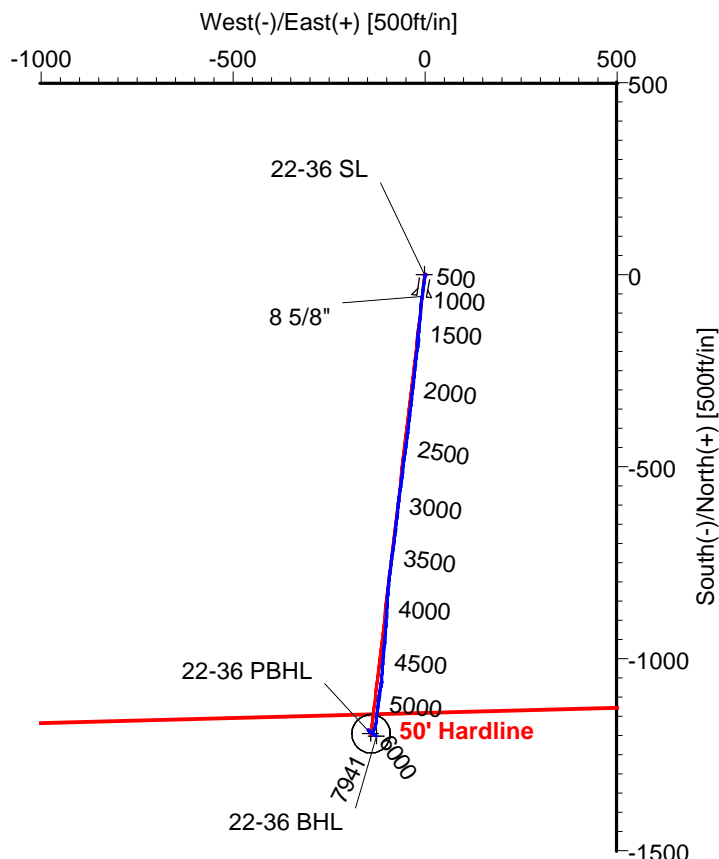
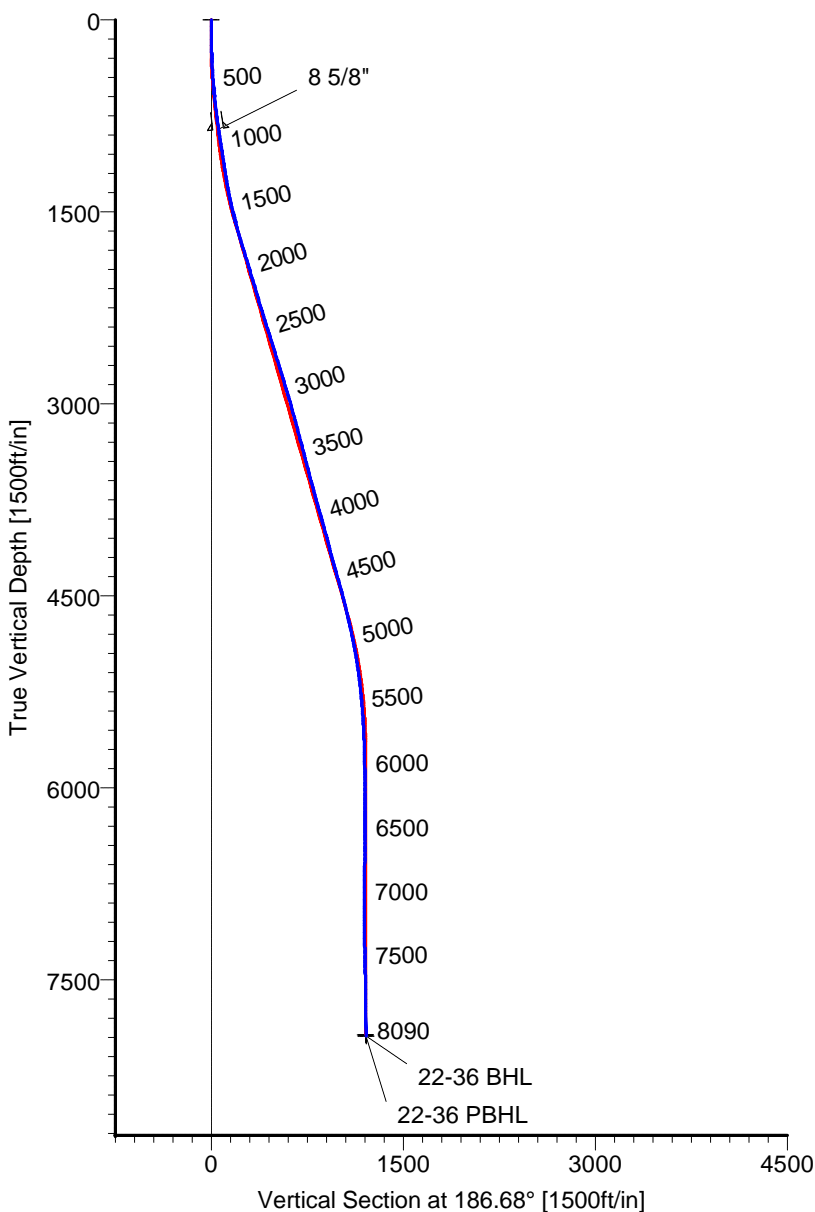
ANADARKO PETROLEUM

Field: Weld County, CO
Site: Carma 18-36 Pad
Well: 22-36
Wellpath: Original Hole



Azimuths to Grid North
True North: -0.35°
Magnetic North: 8.58°

Magnetic Field
Strength: 53022nT
Dip Angle: 66.84°
Date: 08/06/2011
Model: IGRF2010



CASING DETAILS				
No.	TVD	MD	Name	Size
1	855.17	858.00	8 5/8"	8.625

LEGEND	
—	22-36, Original Hole, Plan #2
—	Original Hole

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
22-36 SL	0.00	0.00	0.00	40°11'08.400N	104°57'19.485W	Point
22-36 PBHL	7930.00	-1195.63	-140.03	40°10'56.593N	104°57'21.384W	Circle (Radius: 50)
22-36 BHL	7940.91	-1201.05	-126.11	40°10'56.538N	104°57'21.205W	Point

Wellpath: (22-36/Original Hole)

Created By: Ivonne Gonzalez

Date: 07/07/2011

ARCHER DIRECTIONAL DRILLING SERVICES
911 Regional Park Drive Houston, Texas 77060
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Survey Report

Company: ANADARKO PETROLEUM Field: Weld County, CO Site: Carma 18-36 Pad Well: 22-36 Wellpath: Original Hole	Date: 07/07/2011 Co-ordinate(NE) Reference: Vertical (TVD) Reference: Section (VS) Reference: Survey Calculation Method:	Time: 08:38:47 Well: 22-36, Grid North 4865'GL+15'KB 4880.0 Well (0.00N,0.00E,186.68Azi) Minimum Curvature	Page: 1 Db: Adapti
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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: Carma 18-36 Pad Centered on 3-36 Site Position: From: Geographic Position Uncertainty: 0.00 ft Ground Level: 4880.00 ft	Northing: 1311003.20 ft Easting: 3152104.33 ft Latitude: 40 11 8.920 N Longitude: 104 57 20.174 W North Reference: Grid Grid Convergence: 0.35 deg
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Well: 22-36 Well Position: +N/-S -52.31 ft +E/-W 53.80 ft Position Uncertainty: 0.00 ft	Slot Name: 22-36 Latitude: 40 11 8.400 N Longitude: 104 57 19.485 W
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Wellpath: Original Hole Current Datum: 4865'GL+15'KB Magnetic Data: 08/06/2011 Field Strength: 53022 nT Vertical Section: Depth From (TVD) ft	Drilled From: Surface Tie-on Depth: 0.00 ft Above System Datum: Mean Sea Level Declination: 8.93 deg Mag Dip Angle: 66.84 deg Direction deg
0.00 0.00 0.00 186.68	

Survey Program for Definitive Wellpath				
Date: 07/07/2011	Validated: No	Version: 0		
Actual From ft	To ft	Survey	Toolcode	Tool Name
51.00	7916.00	Survey #1 (51.00-7916.00)	MWD	Std MWD
8090.00	8090.00	Survey #2 (8090.00-8090.00)	Project	Projection

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
51.00	0.50	160.50	51.00	-0.21	0.07	0.20	0.98	0.98	0.00	MWD
142.00	0.70	139.40	141.99	-1.01	0.57	0.93	0.32	0.22	-23.19	MWD
231.00	0.90	190.70	230.99	-2.11	0.79	2.00	0.80	0.22	57.64	MWD
321.00	2.30	186.10	320.95	-4.60	0.47	4.51	1.56	1.56	-5.11	MWD
428.00	3.50	191.70	427.81	-9.93	-0.42	9.91	1.15	1.12	5.23	MWD
518.00	4.60	183.70	517.59	-16.22	-1.21	16.25	1.37	1.22	-8.89	MWD
609.00	6.90	187.90	608.12	-25.28	-2.20	25.36	2.57	2.53	4.62	MWD
700.00	6.90	189.60	698.46	-36.08	-3.86	36.29	0.22	0.00	1.87	MWD
790.00	7.40	190.00	787.76	-47.12	-5.77	47.47	0.56	0.56	0.44	MWD
813.00	7.40	191.00	810.57	-50.03	-6.31	50.43	0.56	0.00	4.35	MWD
858.00	7.88	190.50	855.17	-55.91	-7.42	56.40	1.09	1.08	-1.11	8 5/8"
878.00	8.10	190.30	874.98	-58.65	-7.93	59.17	1.09	1.08	-1.01	MWD
969.00	9.00	181.90	964.97	-72.07	-9.31	72.66	1.69	0.99	-9.23	MWD
1060.00	9.20	184.00	1054.82	-86.44	-10.05	87.02	0.43	0.22	2.31	MWD
1151.00	8.40	185.10	1144.75	-100.32	-11.15	100.93	0.90	-0.88	1.21	MWD
1242.00	9.30	186.90	1234.67	-114.24	-12.62	114.93	1.03	0.99	1.98	MWD
1332.00	10.60	185.80	1323.31	-129.69	-14.33	130.48	1.46	1.44	-1.22	MWD
1423.00	12.10	185.80	1412.53	-147.51	-16.14	148.39	1.65	1.65	0.00	MWD
1514.00	13.20	183.30	1501.32	-167.37	-17.71	168.30	1.35	1.21	-2.75	MWD
1605.00	15.50	186.50	1589.48	-189.83	-19.68	190.83	2.67	2.53	3.52	MWD
1695.00	15.80	186.50	1676.14	-213.95	-22.43	215.11	0.33	0.33	0.00	MWD

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Survey Report

Company: ANADARKO PETROLEUM Field: Weld County, CO Site: Carma 18-36 Pad Well: 22-36 Wellpath: Original Hole	Date: 07/07/2011 Co-ordinate(NE) Reference: Well: 22-36, Grid North Vertical (TVD) Reference: 4865'GL+15'KB 4880.0 Section (VS) Reference: Well (0.00N,0.00E,186.68Azi) Survey Calculation Method: Minimum Curvature	Time: 08:38:47 Page: 2 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
1786.00	16.90	185.80	1763.46	-239.42	-25.17	240.72	1.23	1.21	-0.77	MWD
1877.00	17.10	186.10	1850.48	-265.88	-27.93	267.33	0.24	0.22	0.33	MWD
1968.00	16.70	186.80	1937.55	-292.17	-30.90	293.78	0.49	-0.44	0.77	MWD
2059.00	17.20	186.10	2024.60	-318.53	-33.88	320.31	0.59	0.55	-0.77	MWD
2149.00	16.40	186.80	2110.76	-344.38	-36.79	346.32	0.92	-0.89	0.78	MWD
2240.00	16.90	187.20	2197.94	-370.26	-39.97	372.40	0.56	0.55	0.44	MWD
2331.00	16.90	185.80	2285.01	-396.54	-42.97	398.85	0.45	0.00	-1.54	MWD
2422.00	17.40	187.50	2371.97	-423.19	-46.08	425.68	0.78	0.55	1.87	MWD
2513.00	17.10	188.20	2458.87	-449.92	-49.76	452.66	0.40	-0.33	0.77	MWD
2603.00	17.40	187.90	2544.82	-476.35	-53.50	479.34	0.35	0.33	-0.33	MWD
2694.00	17.60	186.10	2631.61	-503.51	-56.83	506.70	0.63	0.22	-1.98	MWD
2786.00	16.70	186.80	2719.52	-530.46	-59.88	533.83	1.00	-0.98	0.76	MWD
2876.00	17.40	189.60	2805.57	-556.57	-63.65	560.20	1.20	0.78	3.11	MWD
2967.00	16.90	186.50	2892.52	-583.13	-67.42	587.01	1.14	-0.55	-3.41	MWD
3058.00	15.70	185.80	2979.86	-608.52	-70.16	612.55	1.34	-1.32	-0.77	MWD
3149.00	15.70	186.50	3067.47	-633.01	-72.80	637.18	0.21	0.00	0.77	MWD
3240.00	15.10	185.80	3155.20	-657.03	-75.39	661.34	0.69	-0.66	-0.77	MWD
3331.00	14.60	186.80	3243.16	-680.21	-77.95	684.66	0.62	-0.55	1.10	MWD
3422.00	15.00	188.20	3331.14	-703.26	-80.98	707.90	0.59	0.44	1.54	MWD
3512.00	14.40	188.20	3418.20	-725.86	-84.24	730.73	0.67	-0.67	0.00	MWD
3603.00	15.00	186.80	3506.22	-748.75	-87.25	753.82	0.77	0.66	-1.54	MWD
3694.00	15.00	188.20	3594.12	-772.10	-90.32	777.37	0.40	0.00	1.54	MWD
3785.00	14.40	185.40	3682.14	-795.03	-93.07	800.45	1.02	-0.66	-3.08	MWD
3876.00	15.50	185.10	3770.06	-818.40	-95.21	823.92	1.21	1.21	-0.33	MWD
3967.00	16.70	183.30	3857.49	-843.57	-97.05	849.13	1.43	1.32	-1.98	MWD
4057.00	15.30	183.00	3944.00	-868.34	-98.41	873.89	1.56	-1.56	-0.33	MWD
4148.00	15.00	183.30	4031.84	-892.08	-99.72	897.63	0.34	-0.33	0.33	MWD
4239.00	14.30	185.40	4119.88	-915.03	-101.45	920.62	0.97	-0.77	2.31	MWD
4330.00	15.10	183.30	4207.90	-938.05	-103.19	943.69	1.06	0.88	-2.31	MWD
4421.00	16.40	185.40	4295.48	-962.68	-105.09	968.36	1.56	1.43	2.31	MWD
4511.00	16.00	185.40	4381.91	-987.67	-107.45	993.47	0.44	-0.44	0.00	MWD
4602.00	15.00	184.70	4469.60	-1011.90	-109.59	1017.78	1.12	-1.10	-0.77	MWD
4693.00	13.90	183.70	4557.72	-1034.54	-111.26	1040.46	1.24	-1.21	-1.10	MWD
4784.00	13.20	184.00	4646.18	-1055.81	-112.69	1061.76	0.77	-0.77	0.33	MWD
4874.00	12.80	190.70	4733.88	-1075.86	-115.26	1081.97	1.73	-0.44	7.44	MWD
4965.00	12.00	189.30	4822.76	-1095.10	-118.66	1101.47	0.94	-0.88	-1.54	MWD
5056.00	10.40	188.20	4912.02	-1112.57	-121.36	1119.13	1.77	-1.76	-1.21	MWD
5147.00	9.00	186.10	5001.72	-1127.78	-123.29	1134.46	1.59	-1.54	-2.31	MWD
5237.00	7.90	184.00	5090.74	-1140.95	-124.47	1147.68	1.27	-1.22	-2.33	MWD
5328.00	6.70	185.40	5181.00	-1152.47	-125.41	1159.24	1.33	-1.32	1.54	MWD
5419.00	5.60	185.40	5271.48	-1162.18	-126.32	1168.98	1.21	-1.21	0.00	MWD
5509.00	4.80	196.30	5361.11	-1170.16	-127.79	1177.09	1.41	-0.89	12.11	MWD
5600.00	3.70	194.60	5451.86	-1176.66	-129.60	1183.75	1.22	-1.21	-1.87	MWD
5691.00	3.00	194.20	5542.70	-1181.81	-130.93	1189.02	0.77	-0.77	-0.44	MWD
5782.00	1.90	206.90	5633.62	-1185.46	-132.19	1192.79	1.34	-1.21	13.96	MWD
5872.00	1.60	214.90	5723.57	-1187.82	-133.59	1195.30	0.43	-0.33	8.89	MWD
5963.00	1.20	225.80	5814.55	-1189.53	-135.00	1197.16	0.53	-0.44	11.98	MWD
6054.00	1.10	221.60	5905.53	-1190.85	-136.26	1198.61	0.14	-0.11	-4.62	MWD
6145.00	0.90	235.70	5996.51	-1191.90	-137.43	1199.80	0.35	-0.22	15.49	MWD
6326.00	0.70	264.50	6177.50	-1192.81	-139.71	1200.97	0.24	-0.11	15.91	MWD
6508.00	0.70	320.40	6359.49	-1192.06	-141.52	1200.43	0.36	0.00	30.71	MWD
6690.00	1.20	325.00	6541.46	-1189.64	-143.32	1198.24	0.28	0.27	2.53	MWD
6871.00	1.60	329.20	6722.41	-1185.92	-145.70	1194.82	0.23	0.22	2.32	MWD

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Survey Report

Company: ANADARKO PETROLEUM Field: Weld County, CO Site: Carma 18-36 Pad Well: 22-36 Wellpath: Original Hole	Date: 07/07/2011 Co-ordinate(NE) Reference: Well: 22-36, Grid North Vertical (TVD) Reference: 4865'GL+15'KB 4880.0 Section (VS) Reference: Well (0.00N,0.00E,186.68Azi) 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
7053.00	0.90	228.30	6904.38	-1184.69	-148.07	1193.87	1.09	-0.38	-55.44	MWD
7235.00	0.70	115.80	7086.37	-1186.12	-148.14	1195.30	0.73	-0.11	-61.81	MWD
7416.00	2.60	133.00	7267.28	-1189.40	-144.14	1198.10	1.07	1.05	9.50	MWD
7598.00	2.50	122.80	7449.11	-1194.37	-137.79	1202.29	0.25	-0.05	-5.60	MWD
7779.00	1.60	120.00	7629.99	-1197.77	-132.28	1205.03	0.50	-0.50	-1.55	MWD
7916.00	1.20	117.20	7766.95	-1199.38	-129.35	1206.29	0.30	-0.29	-2.04	MWD
8079.09	1.20	117.20	7930.00	-1200.95	-126.31	1207.49	0.00	0.00	0.00	22-36 PBHL
8090.00	1.20	117.20	7940.91	-1201.05	-126.11	1207.57	0.00	0.00	0.00	22-36 BHL

Targets

Name	Description	Dir.	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<--- Latitude --->			<--- Longitude --->				
								Deg	Min	Sec	Deg	Min	Sec		
22-36 SL			0.00	0.00	0.00	1310950.89	3152158.13	40	11	8.400	N	104	57	19.485	W
22-36 PBHL			7930.00	-1195.63	-140.03	1309755.26	3152018.10	40	10	56.593	N	104	57	21.384	W
-Circle (Radius: 50)															
22-36 BHL			7940.91	-1201.05	-126.11	1309749.84	3152032.02	40	10	56.538	N	104	57	21.205	W

Casing Points

MD ft	TVD ft	Diameter in	Hole Size in	Name
858.00	855.17	8.625	9.875	8 5/8"