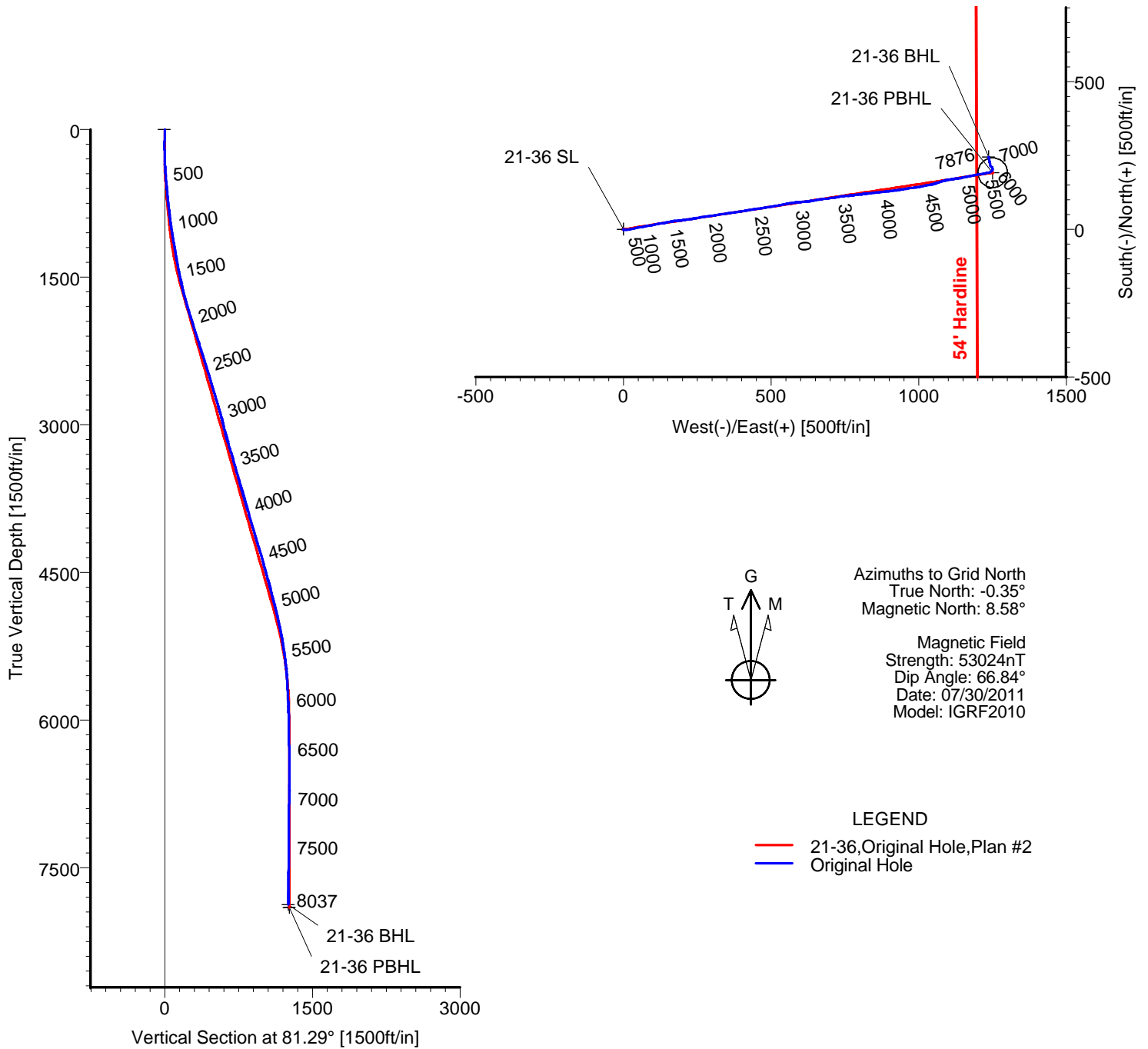


ANADARKO PETROLEUM

Field: Weld County, CO
Site: Carma 18-36 Pad
Well: 21-36
Wellpath: Original Hole



TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
21-36 SL	0.00	0.00	0.00	40°11'08.607N	104°57'19.761W	Point
21-36 BHL	7875.83	244.88	1235.92	40°11'10.952N	104°57'03.817W	Point
21-36 PBHL	7905.00	191.57	1250.44	40°11'10.424N	104°57'03.634W	Circle (Radius: 50)

Wellpath: (21-36/Original Hole)

Created By: Ivonne Gonzalez

Date: 07/15/2011

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

Archer

ARCHER

Survey Report

Company: ANADARKO PETROLEUM Field: Weld County, CO Site: Carma 18-36 Pad Well: 21-36 Wellpath: Original Hole	Date: 07/15/2011 Co-ordinate(NE) Reference: Vertical (TVD) Reference: Section (VS) Reference: Survey Calculation Method:	Time: 09:21:14 Well: 21-36, Grid North 4865'GL+15'KB 4880.0 Well (0.00N,0.00E,81.29Azi) 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
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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: 21-36 Well Position: +N/-S -31.46 ft +E/-W 32.26 ft Position Uncertainty: 0.00 ft	Slot Name: 21-36 Well Position: +N/-S -31.46 ft +E/-W 32.26 ft Position Uncertainty: 0.00 ft
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Wellpath: Original Hole Current Datum: 4865'GL+15'KB Magnetic Data: 07/30/2011 Field Strength: 53024 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 +E/-W ft Direction deg
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Survey Program for Definitive Wellpath Date: 07/15/2011 Actual From ft To ft Survey	Validated: No Version: 0 Toolcode Tool Name
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51.00	7992.00	Survey #1 (51.00-7992.00)	MWD	Std MWD
8037.00	8037.00	Survey #2 (8037.00-8037.00)	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	153.10	51.00	-0.20	0.10	0.07	0.98	0.98	0.00	MWD
141.00	0.70	201.10	140.99	-1.06	0.08	-0.08	0.58	0.22	53.33	MWD
229.00	0.90	117.60	228.99	-1.88	0.50	0.21	1.22	0.23	-94.89	MWD
320.00	2.30	90.80	319.95	-2.24	2.96	2.59	1.70	1.54	-29.45	MWD
398.00	3.50	84.50	397.85	-2.03	6.89	6.51	1.59	1.54	-8.08	MWD
488.00	4.80	78.90	487.61	-1.05	13.32	13.01	1.51	1.44	-6.22	MWD
579.00	5.10	79.60	578.27	0.42	21.04	20.86	0.34	0.33	0.77	MWD
670.00	5.60	78.90	668.88	2.00	29.37	29.34	0.55	0.55	-0.77	MWD
761.00	6.00	80.30	759.41	3.66	38.42	38.53	0.47	0.44	1.54	MWD
806.00	6.50	79.90	804.14	4.50	43.24	43.43	1.12	1.11	-0.89	MWD
900.00	7.00	78.50	897.49	6.58	54.10	54.47	0.56	0.53	-1.49	MWD
990.00	8.40	82.10	986.68	8.57	65.98	66.52	1.64	1.56	4.00	MWD
1081.00	9.30	77.80	1076.60	11.04	79.75	80.50	1.23	0.99	-4.73	MWD
1172.00	9.50	80.30	1166.37	13.86	94.34	95.35	0.50	0.22	2.75	MWD
1262.00	9.70	77.50	1255.11	16.75	109.07	110.34	0.56	0.22	-3.11	MWD
1353.00	10.90	83.10	1344.65	19.45	125.09	126.59	1.72	1.32	6.15	MWD
1444.00	10.90	76.80	1434.01	22.44	142.01	143.77	1.31	0.00	-6.92	MWD
1535.00	11.60	79.90	1523.26	26.01	159.39	161.50	1.02	0.77	3.41	MWD
1625.00	13.50	84.50	1611.11	28.61	178.76	181.03	2.38	2.11	5.11	MWD
1716.00	15.10	82.80	1699.29	31.11	201.10	203.49	1.82	1.76	-1.87	MWD
1807.00	16.00	81.40	1786.96	34.47	225.26	227.88	1.07	0.99	-1.54	MWD

ARCHER

Survey Report

Company: ANADARKO PETROLEUM Field: Weld County, CO Site: Carma 18-36 Pad Well: 21-36 Wellpath: Original Hole	Date: 07/15/2011 Co-ordinate(NE) Reference: Well: 21-36, Grid North Vertical (TVD) Reference: 4865'GL+15'KB 4880.0 Section (VS) Reference: Well (0.00N,0.00E,81.29Azi) Survey Calculation Method: Minimum Curvature	Time: 09:21:14 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
1898.00	17.80	80.30	1874.02	38.69	251.37	254.33	2.01	1.98	-1.21	MWD
1989.00	17.60	81.40	1960.71	43.09	278.68	281.99	0.43	-0.22	1.21	MWD
2080.00	17.60	81.70	2047.45	47.14	305.90	309.51	0.10	0.00	0.33	MWD
2170.00	17.60	81.40	2133.24	51.13	332.82	336.72	0.10	0.00	-0.33	MWD
2261.00	17.10	82.40	2220.10	54.96	359.68	363.86	0.64	-0.55	1.10	MWD
2352.00	17.80	81.70	2306.91	58.74	386.71	391.14	0.80	0.77	-0.77	MWD
2443.00	17.40	79.20	2393.65	63.30	413.84	418.65	0.94	-0.44	-2.75	MWD
2534.00	16.90	82.80	2480.61	67.50	440.33	445.47	1.29	-0.55	3.96	MWD
2625.00	16.90	81.00	2567.68	71.23	466.51	471.92	0.57	0.00	-1.98	MWD
2716.00	16.50	80.60	2654.84	75.41	492.33	498.07	0.46	-0.44	-0.44	MWD
2806.00	16.70	80.60	2741.09	79.61	517.69	523.78	0.22	0.22	0.00	MWD
2897.00	16.40	78.20	2828.32	84.37	543.17	549.68	0.82	-0.33	-2.64	MWD
2988.00	15.30	80.60	2915.86	88.96	567.59	574.51	1.41	-1.21	2.64	MWD
3079.00	14.10	86.60	3003.89	91.58	590.50	597.56	2.13	-1.32	6.59	MWD
3169.00	13.90	84.50	3091.21	93.27	612.20	619.27	0.61	-0.22	-2.33	MWD
3260.00	17.10	81.40	3178.90	96.31	636.32	643.57	3.63	3.52	-3.41	MWD
3351.00	16.50	81.00	3266.01	100.34	662.31	669.87	0.67	-0.66	-0.44	MWD
3442.00	16.20	82.40	3353.33	104.04	687.66	695.48	0.54	-0.33	1.54	MWD
3532.00	16.40	82.10	3439.71	107.44	712.69	720.74	0.24	0.22	-0.33	MWD
3623.00	16.20	81.40	3527.06	111.11	737.96	746.28	0.31	-0.22	-0.77	MWD
3714.00	15.10	85.60	3614.68	113.92	762.33	770.79	1.73	-1.21	4.62	MWD
3805.00	17.20	82.40	3702.09	116.61	787.49	796.07	2.51	2.31	-3.52	MWD
3896.00	15.10	84.20	3789.49	119.58	812.62	821.36	2.37	-2.31	1.98	MWD
3986.00	17.10	83.10	3875.96	122.36	837.43	846.30	2.25	2.22	-1.22	MWD
4077.00	16.70	84.20	3963.03	125.29	863.72	872.73	0.56	-0.44	1.21	MWD
4168.00	16.70	83.80	4050.19	128.02	889.72	898.85	0.13	0.00	-0.44	MWD
4259.00	15.80	83.50	4137.56	130.83	915.03	924.29	0.99	-0.99	-0.33	MWD
4350.00	16.90	80.30	4224.88	134.47	940.38	949.90	1.56	1.21	-3.52	MWD
4440.00	16.00	81.00	4311.19	138.61	965.52	975.38	1.02	-1.00	0.78	MWD
4531.00	16.00	82.80	4398.67	142.14	990.35	1000.46	0.55	0.00	1.98	MWD
4622.00	15.80	79.20	4486.19	146.04	1014.97	1025.38	1.11	-0.22	-3.96	MWD
4712.00	15.70	78.20	4572.81	150.82	1038.92	1049.78	0.32	-0.11	-1.11	MWD
4803.00	14.40	71.20	4660.69	156.99	1061.69	1073.22	2.45	-1.43	-7.69	MWD
4894.00	15.10	74.30	4748.69	163.84	1083.81	1096.12	1.16	0.77	3.41	MWD
4985.00	14.60	81.40	4836.66	168.77	1106.57	1119.36	2.07	-0.55	7.80	MWD
5075.00	13.20	82.80	4924.02	171.75	1127.98	1140.98	1.60	-1.56	1.56	MWD
5166.00	12.00	79.20	5012.83	174.82	1147.58	1160.82	1.58	-1.32	-3.96	MWD
5257.00	11.60	77.10	5101.91	178.64	1165.79	1179.40	0.64	-0.44	-2.31	MWD
5348.00	9.90	80.60	5191.31	181.96	1182.43	1196.34	2.00	-1.87	3.85	MWD
5439.00	8.60	81.40	5281.13	184.26	1196.87	1210.97	1.44	-1.43	0.88	MWD
5529.00	7.20	79.20	5370.27	186.32	1209.07	1223.34	1.59	-1.56	-2.44	MWD
5620.00	6.00	77.10	5460.66	188.45	1219.30	1233.78	1.34	-1.32	-2.31	MWD
5711.00	4.00	78.90	5551.31	190.12	1227.06	1241.69	2.20	-2.20	1.98	MWD
5802.00	3.20	79.90	5642.13	191.18	1232.67	1247.41	0.88	-0.88	1.10	MWD
5893.00	2.80	71.50	5733.01	192.33	1237.28	1252.13	0.65	-0.44	-9.23	MWD
5984.00	2.50	60.60	5823.91	194.01	1241.12	1256.18	0.64	-0.33	-11.98	MWD
6074.00	2.30	52.50	5913.83	196.07	1244.26	1259.60	0.44	-0.22	-9.00	MWD
6165.00	0.70	55.30	6004.80	197.50	1246.16	1261.70	1.76	-1.76	3.08	MWD
6256.00	0.90	56.70	6095.79	198.21	1247.22	1262.85	0.22	0.22	1.54	MWD
6347.00	0.90	55.00	6186.78	199.01	1248.40	1264.14	0.03	0.00	-1.87	MWD
6438.00	1.20	18.40	6277.76	200.33	1249.29	1265.22	0.79	0.33	-40.22	MWD
6619.00	1.20	357.30	6458.73	204.02	1249.80	1266.28	0.24	0.00	-11.66	MWD
6801.00	0.70	94.40	6640.71	205.84	1250.82	1267.56	0.80	-0.27	53.35	MWD

ARCHER

Survey Report

Company: ANADARKO PETROLEUM
Field: Weld County, CO
Site: Carma 18-36 Pad
Well: 21-36
Wellpath: Original Hole

Date: 07/15/2011	Time: 09:21:14	Page: 3
Co-ordinate(NE) Reference:	Well: 21-36, Grid North	
Vertical (TVD) Reference:	4865'GL+15'KB 4880.0	
Section (VS) Reference:	Well (0.00N,0.00E,81.29Azi)	
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
6983.00	3.20	318.30	6822.63	209.54	1248.54	1265.88	2.05	1.37	-74.78	MWD
7165.00	0.90	289.80	7004.50	213.82	1243.82	1261.85	1.34	-1.26	-15.66	MWD
7346.00	1.40	347.80	7185.47	216.46	1242.01	1260.47	0.66	0.28	32.04	MWD
7527.00	2.10	349.60	7366.38	221.89	1240.95	1260.24	0.39	0.39	0.99	MWD
7709.00	2.30	347.10	7548.25	228.73	1239.53	1259.87	0.12	0.11	-1.37	MWD
7890.00	3.20	348.20	7729.04	237.21	1237.69	1259.34	0.50	0.50	0.61	MWD
7992.00	3.00	346.40	7830.89	242.59	1236.48	1258.95	0.22	-0.20	-1.76	MWD
8037.00	3.00	346.40	7875.83	244.88	1235.92	1258.75	0.00	0.00	0.00	21-36 BHL

Targets

Name	Description		TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<---- Latitude ---->			<--- Longitude --->		
	Dip.	Dir.						Deg	Min	Sec	Deg	Min	Sec
21-36 SL			0.00	0.00	0.00	1310971.74	3152136.59	40	11	8.607 N	104	57	19.761 W
21-36 BHL			7875.83	244.88	1235.92	1311216.62	3153372.51	40	11	10.952 N	104	57	3.817 W
21-36 PBHL			7905.00	191.57	1250.44	1311163.31	3153387.03	40	11	10.424 N	104	57	3.634 W
-Circle (Radius: 50)													