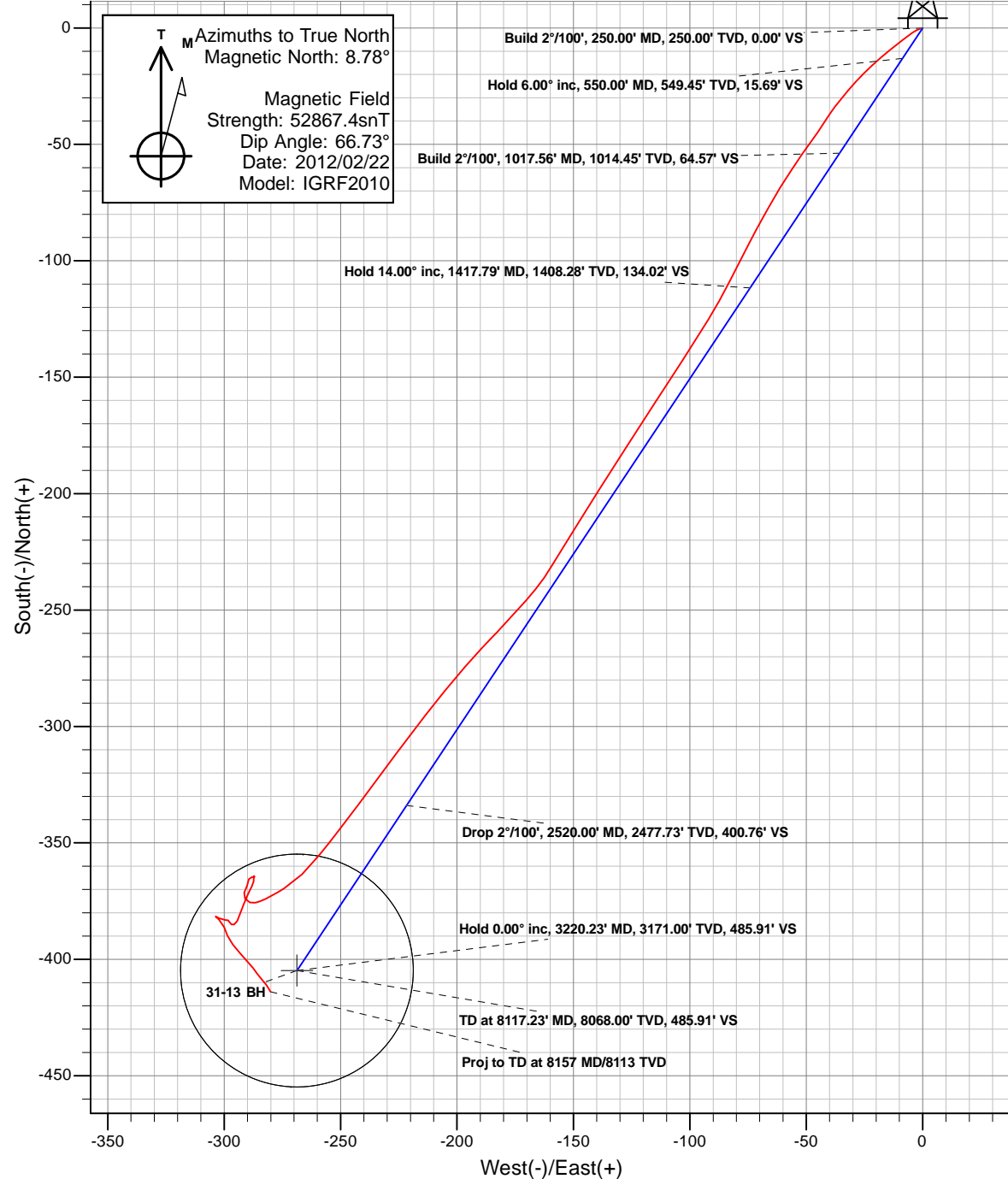
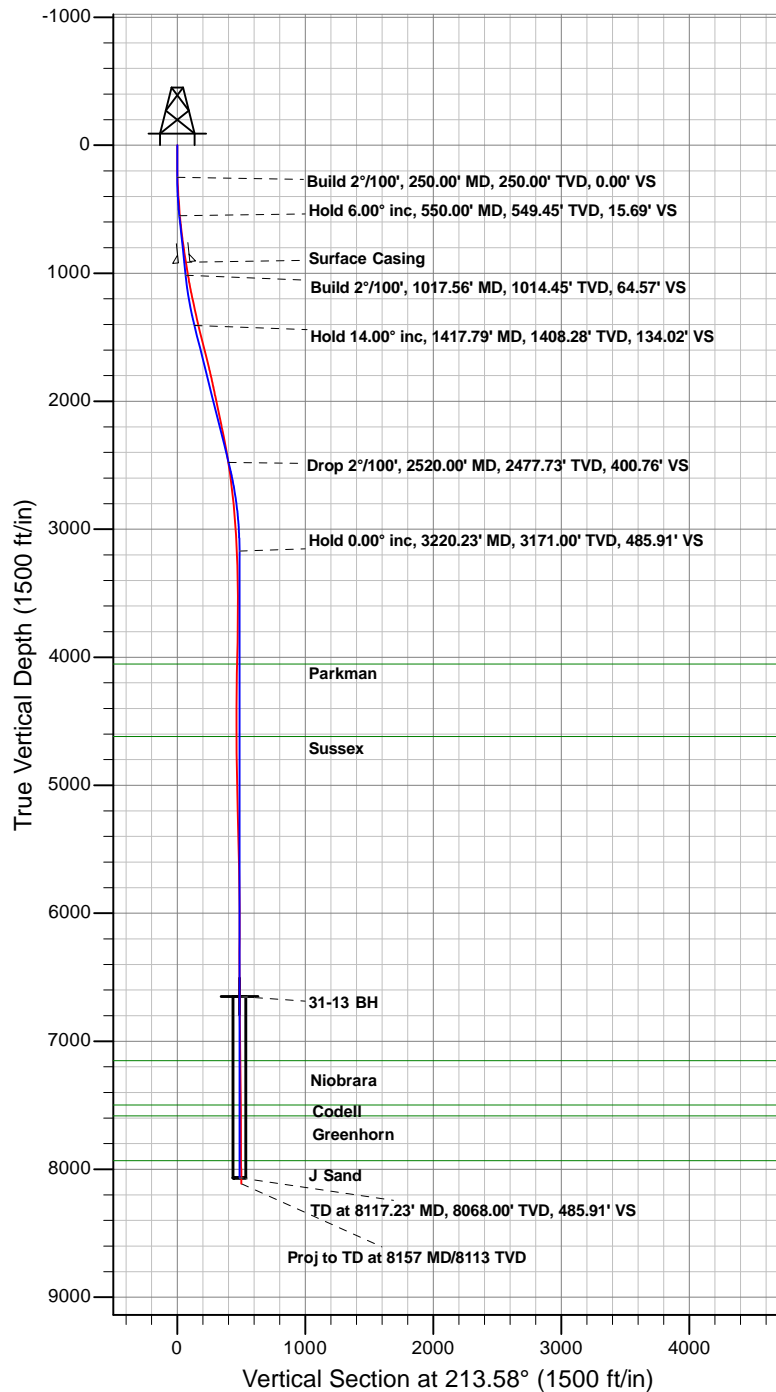




Anadarko Petroleum Corporation

Riverbend 31-13 (111417)
Plan vs Actual



Anadarko Petroleum Corporation

Riverbend

Riverbend 14 Pad

Riverbend 31-13 (111417) - Slot 31-13

31-13

Survey: 31-13

Survey Report - Geographic

31 January, 2012

ARK Directional Services

Survey Report - Geographic

Company:	Anadarko Petroleum Corporation	Local Co-ordinate Reference:	Well Riverbend 31-13 (111417) - Slot 31-13
Project:	Riverbend	TVD Reference:	KB @ 4968.00ft (Original Well Elev)
Site:	Riverbend 14 Pad	MD Reference:	KB @ 4968.00ft (Original Well Elev)
Well:	Riverbend 31-13 (111417)	North Reference:	True
Wellbore:	31-13	Survey Calculation Method:	Minimum Curvature
Design:	31-13	Database:	EDM5000

Project	Riverbend		
Map System:	Universal Transverse Mercator	System Datum:	Mean Sea Level
Geo Datum:	NAD83 Colorado - HARN		
Map Zone:	Zone 13N (108 W to 102 W)		

Site	Riverbend 14 Pad				
Site Position:		Northing:	14,547,138.00 usft	Latitude:	40.055934°N
From:	Lat/Long	Easting:	1,683,122.87 usft	Longitude:	104.847381°W
Position Uncertainty:	0.00 ft	Slot Radius:	13.20 in	Grid Convergence:	0.10 °

Well	Riverbend 31-13 (111417) - Slot 31-13					
Well Position	+N/-S	0.00 ft	Northing:	14,547,088.00 usft	Latitude:	40.055797°N
	+E/-W	0.00 ft	Easting:	1,683,123.09 usft	Longitude:	104.847381°W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,953.00 ft

Wellbore	31-13				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010	02/22/12	8.79	66.73	52,867

Survey Program	Date	01/24/12			
From	To	Survey (Wellbore)	Tool Name	Description	
(ft)	(ft)				
134.00	8,157.00	31-13 (31-13)	MWD	MWD - Standard	

Survey										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Map	Map			
Depth	(°)	(°)	Depth	(ft)	(ft)	Northing	Easting	Latitude	Longitude	
(ft)			(ft)			(usft)	(usft)			
0.00	0.00	0.00	0.00	0.00	0.00	14,547,088.00	1,683,123.09	40.055797°N	104.847381°W	
134.00	0.00	317.36	134.00	0.00	0.00	14,547,088.00	1,683,123.09	40.055797°N	104.847381°W	
226.00	1.58	252.76	225.99	-0.38	-1.21	14,547,087.62	1,683,121.87	40.055796°N	104.847385°W	
319.00	2.90	235.98	318.92	-2.07	-4.39	14,547,085.92	1,683,118.70	40.055791°N	104.847396°W	
440.00	4.61	231.28	439.65	-6.83	-10.72	14,547,081.16	1,683,112.38	40.055778°N	104.847419°W	
530.00	4.70	230.97	529.36	-11.41	-16.40	14,547,076.56	1,683,106.70	40.055765°N	104.847439°W	
618.00	6.28	226.66	616.95	-16.99	-22.71	14,547,070.98	1,683,100.41	40.055750°N	104.847462°W	
707.00	7.38	221.48	705.32	-24.61	-30.03	14,547,063.34	1,683,093.10	40.055729°N	104.847488°W	
794.00	8.31	218.18	791.50	-33.74	-37.62	14,547,054.20	1,683,085.52	40.055704°N	104.847515°W	
839.00	8.79	211.54	836.00	-39.22	-41.43	14,547,048.71	1,683,081.72	40.055689°N	104.847529°W	
883.00	8.79	215.37	879.49	-44.83	-45.13	14,547,043.09	1,683,078.03	40.055674°N	104.847542°W	
958.00	8.79	215.37	953.61	-54.18	-51.77	14,547,033.74	1,683,071.41	40.055648°N	104.847566°W	
1,116.00	10.59	209.70	1,109.35	-76.63	-65.95	14,547,011.26	1,683,057.27	40.055586°N	104.847616°W	
1,203.00	12.70	207.68	1,194.55	-92.05	-74.35	14,546,995.83	1,683,048.89	40.055544°N	104.847647°W	
1,292.00	12.00	206.36	1,281.49	-109.00	-83.01	14,546,978.86	1,683,040.27	40.055497°N	104.847677°W	
1,380.00	12.70	211.90	1,367.46	-125.41	-92.18	14,546,962.43	1,683,031.12	40.055452°N	104.847710°W	
1,468.00	14.28	212.77	1,453.03	-142.75	-103.17	14,546,945.07	1,683,020.16	40.055405°N	104.847750°W	
1,558.00	14.19	212.99	1,540.27	-161.34	-115.18	14,546,926.47	1,683,008.18	40.055354°N	104.847792°W	
1,646.00	14.28	213.17	1,625.56	-179.47	-126.99	14,546,908.32	1,682,996.40	40.055304°N	104.847835°W	
1,735.00	13.71	211.76	1,711.92	-197.62	-138.55	14,546,890.14	1,682,984.87	40.055254°N	104.847876°W	
1,821.00	12.92	212.29	1,795.61	-214.42	-149.05	14,546,873.33	1,682,974.40	40.055208°N	104.847913°W	

ARK Directional Services

Survey Report - Geographic

Company:	Anadarko Petroleum Corporation	Local Co-ordinate Reference:	Well Riverbend 31-13 (111417) - Slot 31-13
Project:	Riverbend	TVD Reference:	KB @ 4968.00ft (Original Well Elev)
Site:	Riverbend 14 Pad	MD Reference:	KB @ 4968.00ft (Original Well Elev)
Well:	Riverbend 31-13 (111417)	North Reference:	True
Wellbore:	31-13	Survey Calculation Method:	Minimum Curvature
Design:	31-13	Database:	EDM5000

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,910.00	12.00	211.06	1,882.51	-230.75	-159.14	14,546,856.97	1,682,964.34	40.055163°N	104.847950°W
2,001.00	11.82	222.18	1,971.57	-245.77	-170.28	14,546,841.94	1,682,953.23	40.055122°N	104.847989°W
2,088.00	12.61	222.57	2,056.60	-259.36	-182.69	14,546,828.33	1,682,940.84	40.055085°N	104.848034°W
2,173.00	11.29	222.97	2,139.75	-272.29	-194.64	14,546,815.38	1,682,928.92	40.055049°N	104.848076°W
2,262.00	12.22	218.18	2,226.89	-286.07	-206.40	14,546,801.58	1,682,917.18	40.055011°N	104.848118°W
2,352.00	10.81	217.39	2,315.07	-300.26	-217.41	14,546,787.37	1,682,906.19	40.054972°N	104.848158°W
2,441.00	9.58	216.77	2,402.67	-312.82	-226.91	14,546,774.79	1,682,896.71	40.054938°N	104.848192°W
2,529.00	8.92	216.99	2,489.52	-324.14	-235.40	14,546,763.46	1,682,888.24	40.054907°N	104.848222°W
2,618.00	8.31	216.69	2,577.52	-334.81	-243.39	14,546,752.78	1,682,880.27	40.054877°N	104.848251°W
2,706.00	6.99	217.17	2,664.73	-344.17	-250.43	14,546,743.40	1,682,873.25	40.054852°N	104.848276°W
2,840.00	5.19	219.59	2,797.97	-355.34	-259.22	14,546,732.22	1,682,864.48	40.054821°N	104.848307°W
2,971.00	4.39	225.69	2,928.51	-363.41	-266.58	14,546,724.14	1,682,857.13	40.054799°N	104.848333°W
3,102.00	4.31	237.78	3,059.14	-369.54	-274.34	14,546,717.99	1,682,849.38	40.054782°N	104.848361°W
3,236.00	2.29	243.67	3,192.91	-373.41	-281.00	14,546,714.11	1,682,842.73	40.054771°N	104.848385°W
3,370.00	1.19	247.80	3,326.84	-375.12	-284.68	14,546,712.39	1,682,839.05	40.054767°N	104.848398°W
3,503.00	0.88	266.17	3,459.82	-375.71	-286.98	14,546,711.80	1,682,836.75	40.054765°N	104.848406°W
3,637.00	0.88	280.80	3,593.81	-375.59	-289.02	14,546,711.92	1,682,834.71	40.054765°N	104.848414°W
3,768.00	1.58	324.26	3,724.78	-373.94	-291.06	14,546,713.57	1,682,832.67	40.054770°N	104.848421°W
3,902.00	1.10	35.28	3,858.75	-371.39	-291.40	14,546,716.12	1,682,832.33	40.054777°N	104.848422°W
4,036.00	1.71	13.70	3,992.71	-368.39	-290.18	14,546,719.11	1,682,833.54	40.054785°N	104.848418°W
4,168.00	0.88	19.06	4,124.68	-365.52	-289.38	14,546,721.99	1,682,834.33	40.054793°N	104.848415°W
4,302.00	0.88	93.68	4,258.66	-364.61	-288.02	14,546,722.89	1,682,835.69	40.054795°N	104.848410°W
4,435.00	0.09	25.00	4,391.66	-364.59	-286.96	14,546,722.93	1,682,836.75	40.054796°N	104.848406°W
4,568.00	0.40	325.89	4,524.66	-364.11	-287.17	14,546,723.40	1,682,836.54	40.054797°N	104.848407°W
4,701.00	0.79	172.17	4,657.65	-364.63	-287.31	14,546,722.88	1,682,836.40	40.054795°N	104.848408°W
4,836.00	0.88	191.20	4,792.64	-366.57	-287.38	14,546,720.94	1,682,836.33	40.054790°N	104.848408°W
4,971.00	1.10	205.96	4,927.62	-368.75	-288.15	14,546,718.76	1,682,835.57	40.054784°N	104.848411°W
5,105.00	0.88	207.06	5,061.60	-370.82	-289.18	14,546,716.68	1,682,834.54	40.054778°N	104.848414°W
5,239.00	1.32	202.80	5,195.57	-373.16	-290.25	14,546,714.34	1,682,833.48	40.054772°N	104.848418°W
5,374.00	1.80	203.37	5,330.52	-376.54	-291.69	14,546,710.96	1,682,832.04	40.054763°N	104.848423°W
5,507.00	1.71	198.56	5,463.46	-380.34	-293.15	14,546,707.16	1,682,830.58	40.054752°N	104.848428°W
5,642.00	1.19	207.59	5,598.42	-383.49	-294.44	14,546,704.00	1,682,829.30	40.054744°N	104.848433°W
5,776.00	0.62	246.88	5,732.40	-385.01	-295.75	14,546,702.48	1,682,827.99	40.054739°N	104.848438°W
5,911.00	0.48	300.40	5,867.40	-385.01	-296.91	14,546,702.48	1,682,826.83	40.054739°N	104.848442°W
6,044.00	0.62	335.16	6,000.39	-384.08	-297.70	14,546,703.42	1,682,826.05	40.054742°N	104.848445°W
6,178.00	0.31	305.37	6,134.39	-383.21	-298.30	14,546,704.28	1,682,825.45	40.054744°N	104.848447°W
6,311.00	0.88	265.99	6,267.38	-383.07	-299.61	14,546,704.42	1,682,824.13	40.054745°N	104.848452°W
6,445.00	1.41	296.89	6,401.35	-382.40	-302.11	14,546,705.09	1,682,821.64	40.054747°N	104.848460°W
6,579.00	0.09	293.59	6,535.34	-381.61	-303.67	14,546,705.87	1,682,820.07	40.054749°N	104.848466°W
6,695.24	1.46	131.93	6,651.57	-382.56	-302.66	14,546,704.92	1,682,821.09	40.054746°N	104.848462°W
31-13 BH									
6,695.78	1.47	131.93	6,652.11	-382.57	-302.64	14,546,704.91	1,682,821.10	40.054746°N	104.848462°W
31-13 Legal Window									
6,714.00	1.71	131.78	6,670.32	-382.91	-302.27	14,546,704.57	1,682,821.47	40.054745°N	104.848461°W
6,849.00	1.71	160.17	6,805.26	-386.15	-300.08	14,546,701.34	1,682,823.67	40.054736°N	104.848453°W
6,983.00	1.71	156.70	6,939.20	-389.87	-298.61	14,546,697.63	1,682,825.14	40.054726°N	104.848448°W
7,118.00	2.11	141.48	7,074.13	-393.66	-296.27	14,546,693.84	1,682,827.49	40.054716°N	104.848440°W
7,251.00	2.20	138.59	7,207.03	-397.49	-293.06	14,546,690.01	1,682,830.71	40.054705°N	104.848428°W
7,385.00	1.80	138.07	7,340.95	-400.98	-289.95	14,546,686.52	1,682,833.82	40.054696°N	104.848417°W
7,519.00	1.32	143.16	7,474.90	-403.79	-287.62	14,546,683.72	1,682,836.16	40.054688°N	104.848409°W
7,654.00	1.41	143.69	7,609.86	-406.37	-285.70	14,546,681.15	1,682,838.08	40.054681°N	104.848402°W
7,786.00	1.32	138.59	7,741.83	-408.82	-283.73	14,546,678.70	1,682,840.05	40.054674°N	104.848395°W
7,917.00	1.10	141.19	7,872.80	-410.93	-281.95	14,546,676.59	1,682,841.84	40.054668°N	104.848388°W
8,052.00	0.70	154.68	8,007.78	-412.68	-280.78	14,546,674.84	1,682,843.01	40.054663°N	104.848384°W
8,113.00	0.79	149.67	8,068.77	-413.38	-280.41	14,546,674.14	1,682,843.38	40.054662°N	104.848383°W

ARK Directional Services

Survey Report - Geographic

Company:	Anadarko Petroleum Corporation	Local Co-ordinate Reference:	Well Riverbend 31-13 (111417) - Slot 31-13
Project:	Riverbend	TVD Reference:	KB @ 4968.00ft (Original Well Elev)
Site:	Riverbend 14 Pad	MD Reference:	KB @ 4968.00ft (Original Well Elev)
Well:	Riverbend 31-13 (111417)	North Reference:	True
Wellbore:	31-13	Survey Calculation Method:	Minimum Curvature
Design:	31-13	Database:	EDM5000

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
8,157.00	0.79	149.67	8,112.77	-413.91	-280.10	14,546,673.62	1,682,843.69	40.054660°N	104.848382°W
Proj to TD at 8157 MD/8113 TVD									

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
8,157.00	8,112.77	-413.91	-280.10	Proj to TD at 8157 MD/8113 TVD

Checked By: _____	Approved By: _____	Date: _____
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