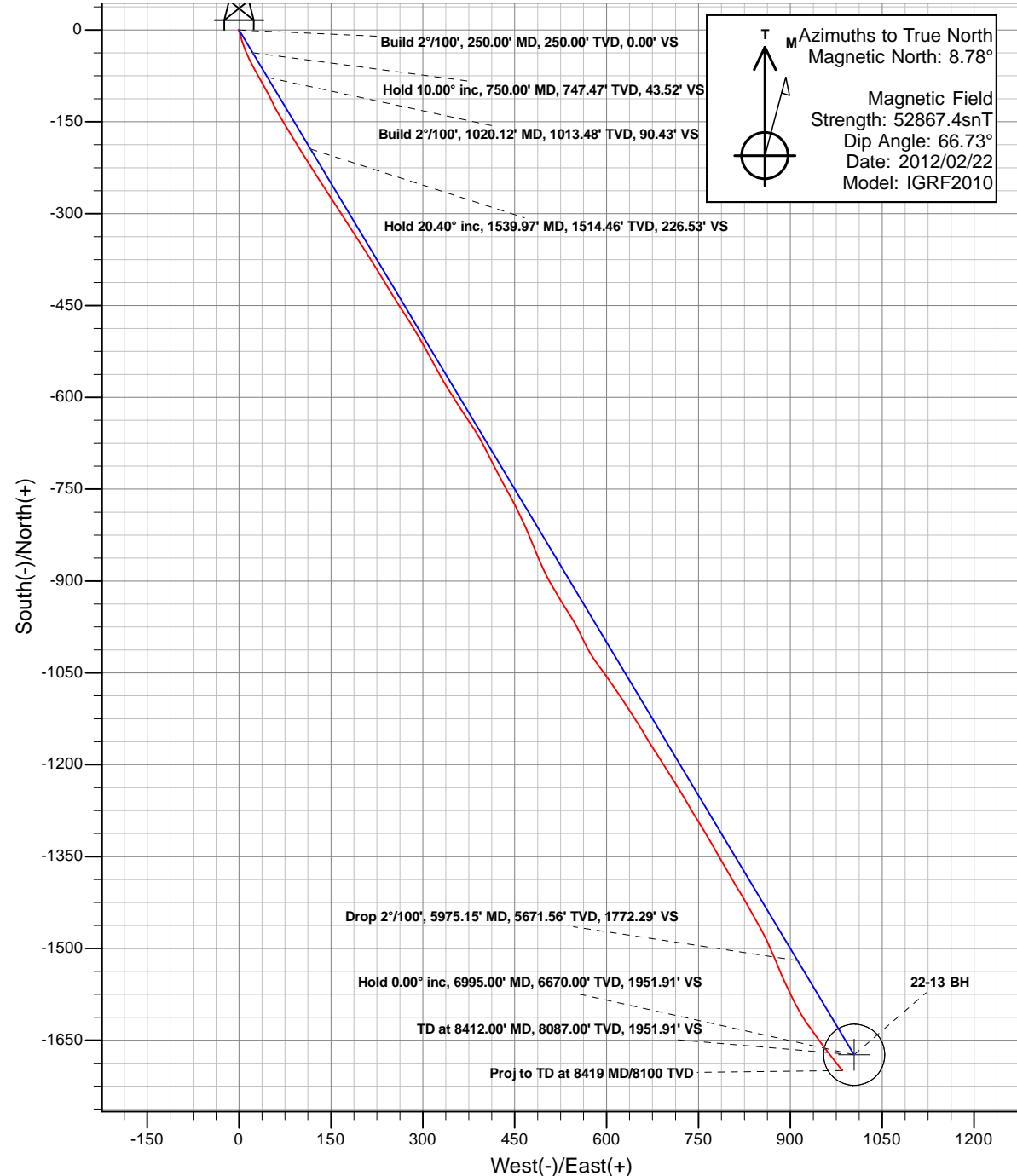
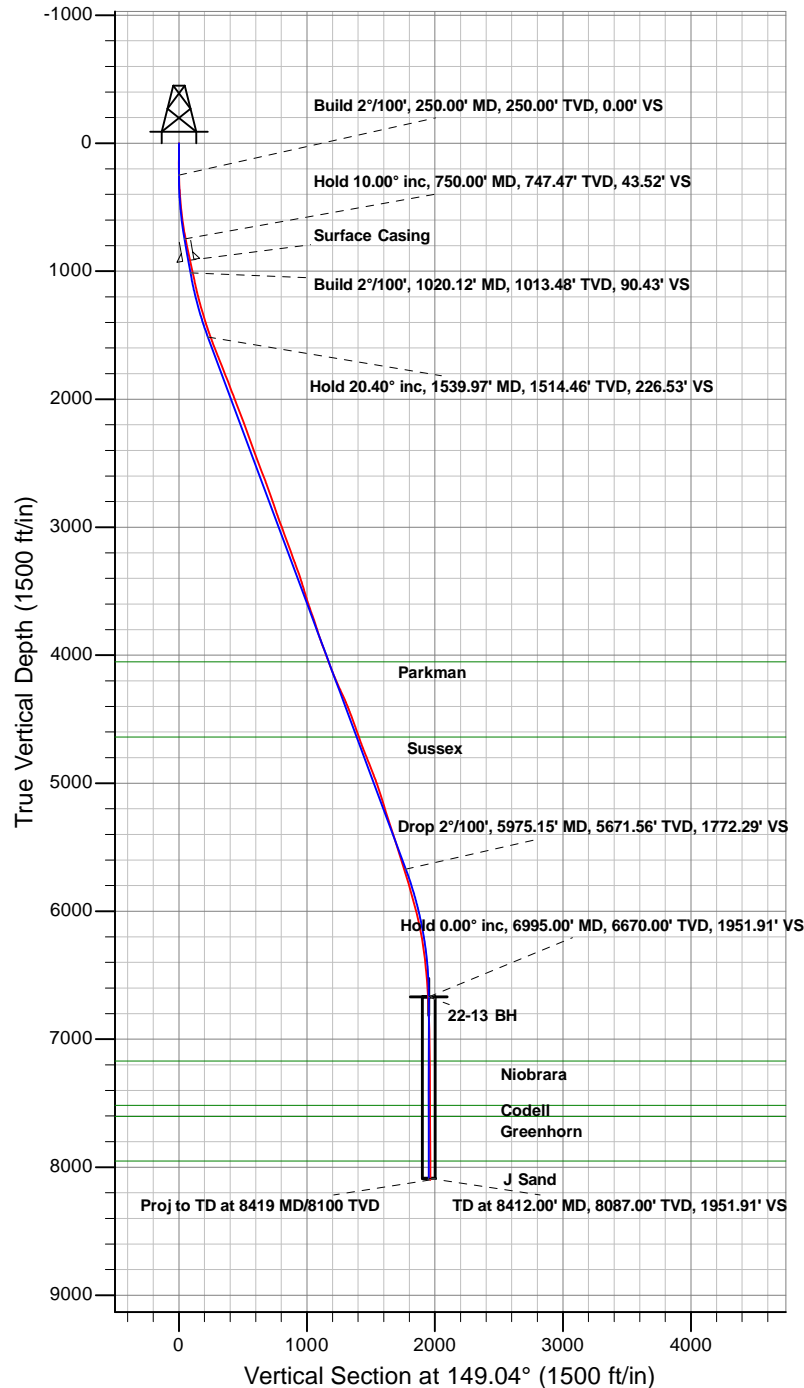




Anadarko Petroleum Corporation

Riverbend 22-13 (111416)
Plan vs Actual



Anadarko Petroleum Corporation

Riverbend

Riverbend 14 Pad

Riverbend 22-13 (111416) - Slot 22-13

22-13

Survey: 22-13

Survey Report - Geographic

31 January, 2012

ARK Directional Services

Survey Report - Geographic

Company:	Anadarko Petroleum Corporation	Local Co-ordinate Reference:	Well Riverbend 22-13 (111416) - Slot 22-13
Project:	Riverbend	TVD Reference:	KB @ 4967.00ft (Original Well Elev)
Site:	Riverbend 14 Pad	MD Reference:	KB @ 4967.00ft (Original Well Elev)
Well:	Riverbend 22-13 (111416)	North Reference:	True
Wellbore:	22-13	Survey Calculation Method:	Minimum Curvature
Design:	22-13	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 22-13 (111416) - Slot 22-13					
Well Position	+N/-S	0.00 ft	Northing:	14,547,098.00 usft	Latitude:	40.055824°N
	+E/-W	0.00 ft	Easting:	1,683,123.05 usft	Longitude:	104.847381°W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,952.00 ft

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

Survey Program	Date	01/20/12			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
133.00	8,419.00	22-13 (22-13)	MWD	MWD - Standard	

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	14,547,098.00	1,683,123.05	40.055824°N	104.847381°W
Doversberger Eugene #3 (VE) - Doversberger Unit A #1 (VE) - Doversberger Eugene #4 (VE)									
2.96	0.01	289.99	2.96	0.00	0.00	14,547,098.00	1,683,123.05	40.055824°N	104.847381°W
Chikuma Harry S #2 (VE) at TD									
24.18	0.11	289.99	24.18	0.01	-0.02	14,547,098.01	1,683,123.03	40.055824°N	104.847381°W
Harry S Chikuma GU B-True #1 (8096° MD)									
28.38	0.13	289.99	28.38	0.01	-0.03	14,547,098.01	1,683,123.02	40.055824°N	104.847381°W
Mathisen Unit #2 (VE)									
133.00	0.62	289.99	133.00	0.25	-0.68	14,547,098.25	1,683,122.37	40.055825°N	104.847383°W
225.00	1.01	155.47	224.99	-0.32	-0.81	14,547,097.68	1,683,122.24	40.055823°N	104.847384°W
318.00	2.81	153.36	317.94	-3.11	0.56	14,547,094.90	1,683,123.61	40.055816°N	104.847379°W
393.00	4.09	167.77	392.80	-7.36	1.95	14,547,090.64	1,683,125.01	40.055804°N	104.847374°W
484.00	5.41	163.69	483.49	-14.65	3.84	14,547,083.36	1,683,126.91	40.055784°N	104.847367°W
573.00	7.21	161.80	571.94	-23.98	6.76	14,547,074.03	1,683,129.85	40.055758°N	104.847357°W
660.00	9.01	158.28	658.07	-35.50	10.99	14,547,062.52	1,683,134.10	40.055727°N	104.847342°W
748.00	11.12	152.57	744.71	-49.44	17.45	14,547,048.60	1,683,140.58	40.055688°N	104.847319°W
838.00	12.08	150.86	832.88	-65.37	26.03	14,547,032.68	1,683,149.19	40.055645°N	104.847288°W
1,004.00	12.08	150.86	995.20	-95.71	42.95	14,547,002.37	1,683,166.16	40.055561°N	104.847227°W
1,059.00	12.22	154.77	1,048.97	-106.00	48.23	14,546,992.08	1,683,171.46	40.055533°N	104.847209°W
1,148.00	12.61	152.57	1,135.89	-123.14	56.72	14,546,974.96	1,683,179.98	40.055486°N	104.847178°W
1,236.00	15.29	149.36	1,221.29	-141.66	67.06	14,546,956.46	1,683,190.35	40.055435°N	104.847141°W

ARK Directional Services

Survey Report - Geographic

Company:	Anadarko Petroleum Corporation	Local Co-ordinate Reference:	Well Riverbend 22-13 (111416) - Slot 22-13
Project:	Riverbend	TVD Reference:	KB @ 4967.00ft (Original Well Elev)
Site:	Riverbend 14 Pad	MD Reference:	KB @ 4967.00ft (Original Well Elev)
Well:	Riverbend 22-13 (111416)	North Reference:	True
Wellbore:	22-13	Survey Calculation Method:	Minimum Curvature
Design:	22-13	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
1,324.00	16.39	149.67	1,305.94	-162.36	79.25	14,546,935.78	1,683,202.57	40.055378°N	104.847098°W
1,413.00	16.92	148.09	1,391.21	-184.19	92.43	14,546,913.97	1,683,215.80	40.055318°N	104.847051°W
1,502.00	19.51	146.77	1,475.74	-207.62	107.43	14,546,890.57	1,683,230.83	40.055254°N	104.846997°W
1,592.00	20.61	147.38	1,560.28	-233.53	124.20	14,546,864.68	1,683,247.65	40.055183°N	104.846937°W
1,682.00	22.02	147.38	1,644.12	-261.09	141.84	14,546,837.16	1,683,265.33	40.055107°N	104.846874°W
1,768.00	21.18	147.56	1,724.08	-287.78	158.86	14,546,810.50	1,683,282.40	40.055034°N	104.846813°W
1,860.00	22.02	146.90	1,809.62	-316.25	177.19	14,546,782.05	1,683,300.78	40.054956°N	104.846748°W
1,950.00	21.01	147.78	1,893.35	-344.04	195.01	14,546,754.30	1,683,318.65	40.054879°N	104.846684°W
2,039.00	20.70	146.68	1,976.52	-370.68	212.16	14,546,727.69	1,683,335.84	40.054806°N	104.846623°W
2,129.00	21.62	148.97	2,060.45	-398.18	229.44	14,546,700.22	1,683,353.17	40.054731°N	104.846561°W
2,217.00	20.30	148.97	2,142.63	-425.15	245.67	14,546,673.27	1,683,369.45	40.054657°N	104.846503°W
2,307.00	19.82	146.46	2,227.17	-451.25	262.15	14,546,647.20	1,683,385.97	40.054585°N	104.846444°W
2,395.00	20.08	147.87	2,309.89	-476.48	278.43	14,546,622.00	1,683,402.29	40.054516°N	104.846386°W
2,484.00	19.82	150.06	2,393.55	-502.49	294.08	14,546,596.02	1,683,417.99	40.054444°N	104.846330°W
2,573.00	20.79	151.38	2,477.02	-529.43	309.18	14,546,569.10	1,683,433.13	40.054370°N	104.846276°W
2,663.00	20.92	151.47	2,561.12	-557.57	324.50	14,546,540.99	1,683,448.51	40.054293°N	104.846221°W
2,750.00	20.79	148.48	2,642.42	-584.38	340.00	14,546,514.21	1,683,464.04	40.054219°N	104.846166°W
2,838.00	19.38	147.38	2,725.07	-609.99	356.03	14,546,488.63	1,683,480.12	40.054149°N	104.846109°W
2,933.00	19.29	145.80	2,814.71	-636.24	373.35	14,546,462.40	1,683,497.49	40.054077°N	104.846047°W
3,018.00	18.72	148.39	2,895.08	-659.47	388.39	14,546,439.20	1,683,512.57	40.054013°N	104.845993°W
3,108.00	20.79	152.88	2,979.78	-685.99	403.24	14,546,412.70	1,683,527.47	40.053940°N	104.845940°W
3,196.00	20.30	153.58	3,062.19	-713.56	417.15	14,546,385.16	1,683,541.42	40.053865°N	104.845890°W
3,283.00	20.21	151.47	3,143.81	-740.28	431.05	14,546,358.46	1,683,555.36	40.053791°N	104.845841°W
3,372.00	19.91	151.56	3,227.41	-767.11	445.61	14,546,331.65	1,683,569.97	40.053718°N	104.845788°W
3,460.00	20.61	154.68	3,309.97	-794.29	459.37	14,546,304.50	1,683,583.78	40.053643°N	104.845739°W
3,549.00	17.58	157.27	3,436.58	-834.29	477.28	14,546,264.54	1,683,601.75	40.053533°N	104.845675°W
3,683.00	16.48	158.50	3,521.68	-858.43	487.10	14,546,240.41	1,683,611.62	40.053467°N	104.845640°W
3,771.00	18.81	154.59	3,605.53	-882.86	497.76	14,546,216.00	1,683,622.32	40.053400°N	104.845602°W
3,860.00	19.91	149.27	3,689.51	-908.85	511.66	14,546,190.03	1,683,636.27	40.053328°N	104.845552°W
3,950.00	17.71	149.58	3,774.69	-933.83	526.43	14,546,165.08	1,683,651.07	40.053260°N	104.845500°W
4,039.00	18.28	146.46	3,859.34	-957.14	540.99	14,546,141.79	1,683,665.68	40.053196°N	104.845448°W
4,125.00	21.18	154.59	3,940.30	-982.42	555.12	14,546,116.53	1,683,679.85	40.053126°N	104.845397°W
4,212.00	20.21	152.09	4,021.69	-1,009.90	568.90	14,546,089.08	1,683,693.67	40.053051°N	104.845348°W
4,301.00	20.70	143.16	4,105.10	-1,036.08	585.53	14,546,062.93	1,683,710.35	40.052979°N	104.845288°W
4,390.00	23.60	145.10	4,187.52	-1,063.29	605.16	14,546,035.76	1,683,730.03	40.052904°N	104.845218°W
4,479.00	25.00	146.59	4,268.63	-1,093.60	625.71	14,546,005.48	1,683,750.63	40.052821°N	104.845145°W
4,568.00	23.69	147.08	4,349.72	-1,124.31	645.78	14,545,974.81	1,683,770.75	40.052737°N	104.845073°W
4,655.00	21.09	149.89	4,430.15	-1,152.52	663.13	14,545,946.62	1,683,788.16	40.052659°N	104.845011°W
4,743.00	20.30	146.28	4,512.48	-1,178.92	679.55	14,545,920.25	1,683,804.62	40.052587°N	104.844953°W
4,833.00	19.20	147.69	4,597.18	-1,204.41	696.13	14,545,894.79	1,683,821.24	40.052517°N	104.844893°W
4,923.00	19.91	148.48	4,681.99	-1,229.99	712.05	14,545,869.24	1,683,837.21	40.052446°N	104.844836°W
5,009.00	22.10	149.19	4,762.27	-1,256.37	728.00	14,545,842.89	1,683,853.19	40.052374°N	104.844779°W
5,098.00	21.62	148.97	4,844.87	-1,284.79	745.02	14,545,814.49	1,683,870.27	40.052296°N	104.844719°W
5,187.00	21.49	148.88	4,927.65	-1,312.80	761.90	14,545,786.51	1,683,887.20	40.052219°N	104.844658°W
5,277.00	19.29	150.28	5,012.01	-1,339.83	777.79	14,545,759.51	1,683,903.13	40.052145°N	104.844601°W
5,364.00	17.58	150.20	5,094.54	-1,363.71	791.45	14,545,735.65	1,683,916.83	40.052079°N	104.844553°W
5,454.00	16.79	149.98	5,180.52	-1,386.76	804.70	14,545,712.63	1,683,930.13	40.052016°N	104.844505°W
5,542.00	18.28	148.26	5,264.43	-1,409.50	818.32	14,545,689.91	1,683,943.79	40.051954°N	104.844457°W
5,630.00	18.41	150.59	5,347.96	-1,433.35	832.41	14,545,666.09	1,683,957.91	40.051888°N	104.844406°W
5,720.00	17.89	151.47	5,433.48	-1,457.87	845.99	14,545,641.59	1,683,971.53	40.051821°N	104.844358°W
5,810.00	17.01	152.37	5,519.34	-1,481.68	858.70	14,545,617.80	1,683,984.28	40.051755°N	104.844312°W
5,899.00	17.40	157.27	5,604.36	-1,505.49	869.88	14,545,594.01	1,683,995.50	40.051690°N	104.844272°W
5,986.00	17.71	157.80	5,687.31	-1,529.74	879.90	14,545,569.78	1,684,005.57	40.051623°N	104.844237°W
6,074.00	16.70	155.16	5,771.37	-1,553.61	890.27	14,545,545.93	1,684,015.98	40.051558°N	104.844200°W

ARK Directional Services

Survey Report - Geographic

Company:	Anadarko Petroleum Corporation	Local Co-ordinate Reference:	Well Riverbend 22-13 (111416) - Slot 22-13
Project:	Riverbend	TVD Reference:	KB @ 4967.00ft (Original Well Elev)
Site:	Riverbend 14 Pad	MD Reference:	KB @ 4967.00ft (Original Well Elev)
Well:	Riverbend 22-13 (111416)	North Reference:	True
Wellbore:	22-13	Survey Calculation Method:	Minimum Curvature
Design:	22-13	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
6,115.85	16.29	154.73	5,811.50	-1,564.37	895.30	14,545,535.17	1,684,021.03	40.051528°N	104.844182°W
02-14 BH									
6,164.00	15.82	154.20	5,857.77	-1,576.39	901.04	14,545,523.17	1,684,026.79	40.051495°N	104.844161°W
6,255.00	14.81	151.69	5,945.54	-1,597.79	911.96	14,545,501.78	1,684,037.74	40.051436°N	104.844122°W
6,343.00	13.58	146.28	6,030.85	-1,616.29	923.03	14,545,483.30	1,684,048.84	40.051386°N	104.844082°W
6,433.00	11.91	144.00	6,118.63	-1,632.59	934.35	14,545,467.02	1,684,060.20	40.051341°N	104.844042°W
6,521.00	9.89	144.18	6,205.04	-1,646.07	944.12	14,545,453.56	1,684,069.98	40.051304°N	104.844007°W
6,611.00	8.09	144.00	6,293.93	-1,657.46	952.36	14,545,442.18	1,684,078.25	40.051273°N	104.843978°W
6,699.00	6.68	141.89	6,381.20	-1,666.50	959.16	14,545,433.15	1,684,085.06	40.051248°N	104.843953°W
6,788.00	5.19	142.46	6,469.72	-1,673.76	964.81	14,545,425.90	1,684,090.72	40.051228°N	104.843933°W
6,878.00	4.48	142.37	6,559.40	-1,679.77	969.44	14,545,419.90	1,684,095.36	40.051211°N	104.843917°W
6,897.19	4.19	142.37	6,578.54	-1,680.92	970.32	14,545,418.75	1,684,096.25	40.051208°N	104.843914°W
36-12 BH									
6,967.00	3.12	142.37	6,648.20	-1,684.45	973.04	14,545,415.23	1,684,098.97	40.051198°N	104.843904°W
6,989.30	2.99	142.42	6,670.47	-1,685.39	973.76	14,545,414.29	1,684,099.70	40.051196°N	104.843901°W
22-13 BH - 22-13 Legal Window									
7,058.00	2.59	142.59	6,739.09	-1,688.04	975.80	14,545,411.64	1,684,101.74	40.051189°N	104.843894°W
7,146.00	2.02	143.47	6,827.02	-1,690.87	977.93	14,545,408.82	1,684,103.87	40.051181°N	104.843886°W
7,235.00	1.49	138.46	6,915.97	-1,692.99	979.63	14,545,406.70	1,684,105.58	40.051175°N	104.843880°W
7,325.00	1.01	138.07	7,005.95	-1,694.46	980.94	14,545,405.23	1,684,106.88	40.051171°N	104.843876°W
7,415.00	0.48	142.07	7,095.94	-1,695.35	981.70	14,545,404.35	1,684,107.65	40.051169°N	104.843873°W
7,505.00	0.40	150.46	7,185.94	-1,695.92	982.08	14,545,403.78	1,684,108.04	40.051167°N	104.843871°W
7,594.00	0.40	124.97	7,274.94	-1,696.36	982.49	14,545,403.33	1,684,108.44	40.051166°N	104.843870°W
7,683.00	0.48	164.35	7,363.94	-1,696.90	982.85	14,545,402.79	1,684,108.80	40.051164°N	104.843869°W
7,818.00	0.48	112.58	7,498.93	-1,697.66	983.52	14,545,402.03	1,684,109.48	40.051162°N	104.843866°W
7,905.00	0.40	117.06	7,585.93	-1,697.94	984.13	14,545,401.75	1,684,110.08	40.051161°N	104.843864°W
7,994.00	0.31	126.47	7,674.93	-1,698.23	984.60	14,545,401.47	1,684,110.55	40.051161°N	104.843862°W
8,084.00	0.22	121.37	7,764.93	-1,698.46	984.94	14,545,401.24	1,684,110.90	40.051160°N	104.843861°W
8,173.00	0.31	191.07	7,853.93	-1,698.79	985.04	14,545,400.91	1,684,111.00	40.051159°N	104.843861°W
8,264.00	0.30	188.47	7,944.93	-1,699.26	984.96	14,545,400.43	1,684,110.92	40.051158°N	104.843861°W
8,375.00	0.00	116.09	8,055.92	-1,699.55	984.92	14,545,400.15	1,684,110.87	40.051157°N	104.843861°W
8,419.00	0.00	116.09	8,099.92	-1,699.55	984.92	14,545,400.15	1,684,110.87	40.051157°N	104.843861°W
Proj to TD at 8419 MD/8100 TVD									

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
8,419.00	8,099.92	-1,699.55	984.92	Proj to TD at 8419 MD/8100 TVD

Checked By: _____ Approved By: _____ Date: _____