



Job Number: 125547  
 Company: Anadarko  
 Lease/Well: Camenisch 36-2  
 Location: S2-T1N-R67W  
 Rig Name: Xtreme 11  
 RKB: 5046  
 G.L. or M.S.L.: 5031

State/Country: Colorado / USA  
 Declination: 8.71  
 Grid: True North  
 File name: C:\WINSERVE\125547.SVY  
 Date/Time: 05-Oct-12 / 18:17  
 Curve Name: Camenisch 36-2 AS Drilled

### Cathedral Energy

WINSERVE SURVEY CALCULATIONS  
 Minimum Curvature Method  
 Vertical Section Plane 119.88  
 Vertical Section Referenced to Wellhead  
 Rectangular Coordinates Referenced to Wellhead

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	Direction Deg	Dogleg Severity Deg/100
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
78.00	.70	203.70	78.00	-.44	-.19	.05	.48	203.70	.90
166.00	2.00	164.60	165.97	-2.41	.00	1.20	2.41	179.99	1.73
254.00	3.30	139.00	253.88	-5.80	2.07	4.68	6.16	160.36	1.96
341.00	4.70	139.90	340.67	-10.42	6.01	10.40	12.03	150.02	1.61
418.00	5.70	131.70	417.35	-15.37	10.90	17.11	18.84	144.68	1.61
509.00	6.10	141.20	507.87	-22.15	17.30	26.03	28.10	142.01	1.16
600.00	7.00	138.70	598.27	-30.08	23.99	35.79	38.48	141.43	1.04
691.00	8.10	145.90	688.49	-39.56	31.24	46.80	50.41	141.70	1.59
781.00	11.20	148.70	777.20	-52.28	39.34	60.16	65.43	143.04	3.48
889.00	13.00	149.30	882.80	-71.69	50.99	79.93	87.98	144.58	1.67
976.00	12.70	146.20	967.62	-88.05	61.31	97.02	107.29	145.15	.86
1067.00	14.60	144.50	1056.05	-105.70	73.54	116.42	128.76	145.17	2.13
1157.00	16.10	136.40	1142.84	-123.98	88.73	138.70	152.46	144.41	2.90
1248.00	17.90	137.80	1229.86	-143.48	106.83	164.10	178.88	143.33	2.03
1339.00	19.50	133.00	1316.06	-164.20	127.33	192.21	207.78	142.21	2.44
1430.00	21.00	132.80	1401.44	-185.63	150.41	222.89	238.92	140.98	1.65
1521.00	22.70	134.30	1485.90	-208.98	174.94	255.79	272.53	140.07	1.97
1611.00	24.80	137.30	1568.27	-234.98	200.17	290.63	308.68	139.57	2.69
1702.00	26.10	136.40	1650.44	-263.51	226.92	328.03	347.75	139.27	1.49
1793.00	25.00	135.70	1732.54	-291.76	254.15	365.72	386.94	138.94	1.25
1884.00	24.50	136.70	1815.18	-319.26	280.52	402.28	424.99	138.70	.72
1975.00	24.70	133.30	1897.93	-346.03	307.30	438.84	462.79	138.39	1.57
2065.00	24.00	129.00	1979.93	-370.45	335.22	475.21	499.60	137.86	2.12
2156.00	23.60	123.30	2063.20	-392.10	364.83	511.67	535.57	137.06	2.56

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
				FT	FT	FT	Distance FT	Direction Deg	
2247.00	22.40	120.40	2146.97	-410.88	395.01	547.19	569.96	136.13	1.81
2338.00	22.80	119.00	2230.98	-428.20	425.38	582.16	603.58	135.19	.74
2429.00	23.10	116.10	2314.78	-444.60	456.84	617.60	637.47	134.22	1.29
2519.00	21.40	117.20	2398.07	-459.87	487.30	651.63	670.03	133.34	1.94
2610.00	22.40	113.50	2482.51	-474.38	517.97	685.44	702.37	132.48	1.87
2701.00	21.80	113.30	2566.82	-487.98	549.39	719.46	734.81	131.61	.66
2792.00	21.00	113.20	2651.55	-501.08	579.90	752.44	766.40	130.83	.88
2883.00	21.50	110.20	2736.36	-513.26	610.53	785.08	797.62	130.05	1.31
2974.00	21.20	113.00	2821.12	-525.45	641.33	817.85	829.10	129.33	1.17
3064.00	20.60	110.80	2905.20	-537.43	671.11	849.64	859.78	128.69	1.10
3155.00	22.40	112.30	2989.87	-549.70	702.12	882.64	891.71	128.06	2.07
3246.00	22.60	117.30	3073.95	-564.30	733.70	917.30	925.61	127.56	2.11
3337.00	23.70	115.50	3157.62	-580.19	765.75	953.00	960.73	127.15	1.44
3428.00	23.40	113.00	3241.04	-595.13	798.89	989.18	996.20	126.68	1.15
3519.00	23.60	113.40	3324.49	-609.42	832.24	1025.22	1031.52	126.21	.28
3610.00	23.10	113.50	3408.04	-623.77	865.33	1061.06	1066.72	125.79	.55
3700.00	22.80	111.40	3490.92	-637.18	897.76	1095.85	1100.89	125.36	.97
3791.00	22.20	111.60	3574.99	-649.94	930.16	1130.31	1134.73	124.94	.66
3882.00	21.00	112.00	3659.60	-662.38	961.27	1163.47	1167.38	124.57	1.33
3972.00	20.60	112.30	3743.73	-674.43	990.87	1195.14	1198.61	124.24	.46
4063.00	20.70	110.40	3828.89	-686.11	1020.75	1226.87	1229.91	123.91	.74
4154.00	20.30	110.30	3914.12	-697.19	1050.63	1258.30	1260.91	123.57	.44
4245.00	21.20	111.60	3999.22	-708.72	1080.74	1290.15	1292.39	123.26	1.11
4336.00	20.70	111.70	4084.21	-720.73	1110.98	1322.35	1324.28	122.97	.55
4426.00	20.60	110.80	4168.42	-732.23	1140.56	1353.73	1355.37	122.70	.37
4517.00	21.00	112.30	4253.49	-744.10	1170.61	1385.70	1387.09	122.44	.73
4608.00	21.80	112.00	4338.22	-756.62	1201.36	1418.61	1419.77	122.20	.89
4699.00	21.80	109.00	4422.71	-768.45	1233.01	1451.94	1452.87	121.93	1.22
4790.00	20.60	111.20	4507.55	-779.74	1263.91	1484.36	1485.08	121.67	1.58
4880.00	22.10	111.90	4591.38	-791.78	1294.38	1516.78	1517.35	121.45	1.69
4971.00	21.80	114.50	4675.78	-805.18	1325.64	1550.55	1551.01	121.27	1.12
5062.00	21.70	110.80	4760.31	-818.16	1356.75	1583.99	1584.35	121.09	1.51
5153.00	23.70	113.50	4844.26	-831.43	1389.25	1618.78	1619.04	120.90	2.48
5243.00	22.30	110.70	4927.10	-844.68	1421.81	1653.62	1653.79	120.71	1.97
5334.00	20.60	112.40	5011.80	-856.88	1452.77	1686.54	1686.65	120.53	1.99
5425.00	18.60	109.70	5097.52	-867.87	1481.24	1716.70	1716.76	120.37	2.41
5516.00	16.30	110.80	5184.33	-877.30	1506.84	1743.60	1743.63	120.21	2.55
5606.00	14.80	112.20	5271.03	-886.13	1529.29	1767.46	1767.47	120.09	1.72
5697.00	13.20	111.40	5359.33	-894.32	1549.73	1789.26	1789.26	119.99	1.77
5788.00	10.70	112.50	5448.35	-901.34	1567.21	1807.92	1807.92	119.90	2.76
5879.00	8.30	116.60	5538.09	-907.51	1580.89	1822.85	1822.85	119.86	2.74
5969.00	6.70	118.30	5627.32	-912.91	1591.32	1834.59	1834.59	119.84	1.79
6060.00	6.30	115.60	5717.74	-917.59	1600.50	1844.87	1844.87	119.83	.55
6151.00	4.10	110.00	5808.36	-920.86	1608.06	1853.06	1853.06	119.80	2.48
6242.00	3.60	106.50	5899.15	-922.78	1613.85	1859.04	1859.05	119.76	.61

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
6332.00	1.80	110.00	5989.05	-924.07	1617.89	1863.18	1863.19	119.73	2.01
6423.00	1.70	107.40	6080.00	-924.96	1620.52	1865.91	1865.92	119.72	.14
6514.00	.30	314.90	6170.99	-925.20	1621.64	1867.00	1867.01	119.71	2.17
6604.00	.20	307.30	6260.99	-924.93	1621.35	1866.61	1866.62	119.70	.12
6695.00	.50	309.00	6351.99	-924.59	1620.92	1866.07	1866.07	119.70	.33
6786.00	.70	320.10	6442.98	-923.91	1620.25	1865.15	1865.16	119.69	.25
6877.00	.60	4.20	6533.98	-923.01	1619.93	1864.42	1864.44	119.67	.55
6967.00	.40	.40	6623.98	-922.23	1619.97	1864.06	1864.08	119.65	.23
7058.00	.20	27.50	6714.97	-921.77	1620.04	1863.90	1863.92	119.64	.26
7149.00	.60	147.10	6805.97	-922.03	1620.37	1864.32	1864.34	119.64	.79
7240.00	.50	110.80	6896.97	-922.57	1621.00	1865.13	1865.15	119.65	.39
7330.00	.90	139.30	6986.96	-923.24	1621.83	1866.19	1866.20	119.65	.58
7421.00	.90	150.00	7077.95	-924.40	1622.66	1867.48	1867.49	119.67	.18
7512.00	.60	152.90	7168.94	-925.45	1623.23	1868.50	1868.51	119.69	.33
7603.00	.80	167.40	7259.94	-926.49	1623.59	1869.33	1869.34	119.71	.29
7694.00	1.00	160.40	7350.93	-927.86	1623.99	1870.36	1870.37	119.74	.25
7784.00	1.10	103.80	7440.91	-928.80	1625.09	1871.79	1871.79	119.75	1.11
7875.00	.50	167.70	7531.90	-929.40	1626.03	1872.89	1872.90	119.75	1.09
7966.00	.10	12.10	7622.90	-929.71	1626.13	1873.14	1873.14	119.76	.65
8057.00	.50	81.30	7713.90	-929.57	1626.54	1873.42	1873.43	119.75	.52
8148.00	.40	99.50	7804.90	-929.57	1627.24	1874.03	1874.04	119.74	.19
8239.00	.20	278.70	7895.90	-929.59	1627.40	1874.18	1874.19	119.74	.66
8329.00	.40	329.60	7985.90	-929.30	1627.08	1873.76	1873.77	119.73	.35
8420.00	.40	320.80	8076.90	-928.78	1626.72	1873.19	1873.19	119.72	.07
8532.00	.00	230.30	8188.90	-928.48	1626.48	1872.82	1872.83	119.72	.36

**--Projection to Bit--**

8587.00	.00	230.30	8243.90	-928.48	1626.48	1872.82	1872.83	119.72	.00
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