

1 General

1.1 Customer Information

Company	PICEANCE HL
Representative	Eric Kolstad
Address	1515 Arapahoe St., Suite 1000 Denver, CO 80202

1.2 Well Information

Well	RG 433-14-298	Wellbore No.	OH
Well Name	FEDERAL RG 433-14-298	Common Name	RG 433-14-298
Project	RG 14-02S-098W	Site	RG 23-14-298 Pad
Vertical Section Azimuth	80.72 (°)	North Reference	True
Origin N/S		Origin E/W	
Spud Date	3/26/2011	UWI	RG 433-14-298
Active Datum	KB @6,620.0ft (above Mean Sea Level)		

2 Survey Name

2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	CATHEDRAL
Date Started	3/23/2011	Ended	
Tool Name	MWD	Engineer	

2.1.1 Tie On Point

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)
0.0	0.00	0.00	0.00	0.00	0.00

2.1.2 Survey Stations

Date	Type	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLS (°/100ft)	Build Rate (°/100ft)	Turn (°/100ft)	TFace (°)
3/23/2011	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/23/2011	NORMAL	242.0	2.90	136.30	241.90	-4.43	4.23	3.46	1.20	1.20	0.00	136.30
	NORMAL	335.0	3.60	108.60	334.75	-7.06	8.62	7.37	1.82	0.75	-29.78	279.78
	NORMAL	428.0	4.20	94.70	427.54	-8.27	14.78	13.26	1.20	0.65	-14.95	295.34
	NORMAL	521.0	5.00	81.10	520.24	-7.92	22.18	20.62	1.45	0.86	-14.62	299.35
	NORMAL	613.0	6.40	67.90	611.79	-5.37	30.90	29.63	2.08	1.52	-14.35	310.18
	NORMAL	706.0	8.10	68.50	704.04	-1.02	41.80	41.08	1.83	1.83	0.65	2.85
	NORMAL	800.0	9.40	82.60	796.96	2.40	55.57	55.23	2.66	1.38	15.00	65.88
	NORMAL	894.0	10.70	82.30	889.51	4.55	71.83	71.63	1.38	1.38	-0.32	357.55
	NORMAL	988.0	11.50	75.70	981.76	8.04	89.56	89.68	1.60	0.85	-7.02	298.93
	NORMAL	1,082.0	13.50	76.80	1,073.52	12.86	109.32	109.97	2.14	2.13	1.17	7.33
	NORMAL	1,175.0	15.60	79.30	1,163.54	17.66	132.18	133.30	2.36	2.26	2.69	17.86
	NORMAL	1,267.0	17.50	79.80	1,251.72	22.41	157.95	159.50	2.07	2.07	0.54	4.53
	NORMAL	1,358.0	18.30	80.40	1,338.32	27.21	185.51	187.47	0.90	0.88	0.66	13.27
	NORMAL	1,451.0	18.30	80.00	1,426.61	32.18	214.28	216.67	0.14	0.00	-0.43	269.81
	NORMAL	1,544.0	17.80	79.90	1,515.03	37.21	242.66	245.48	0.54	-0.54	-0.11	183.50
	NORMAL	1,637.0	18.20	80.80	1,603.48	42.03	270.99	274.22	0.52	0.43	0.97	35.24
3/27/2011	NORMAL	1,731.0	18.30	80.00	1,692.75	46.93	300.01	303.65	0.29	0.11	-0.85	291.38
	NORMAL	1,824.0	18.30	81.40	1,781.05	51.65	328.83	332.85	0.47	0.00	1.51	90.66
	NORMAL	1,917.0	18.40	81.10	1,869.32	56.11	357.76	362.13	0.15	0.11	-0.32	316.49

2.1.2 Survey Stations (Continued)

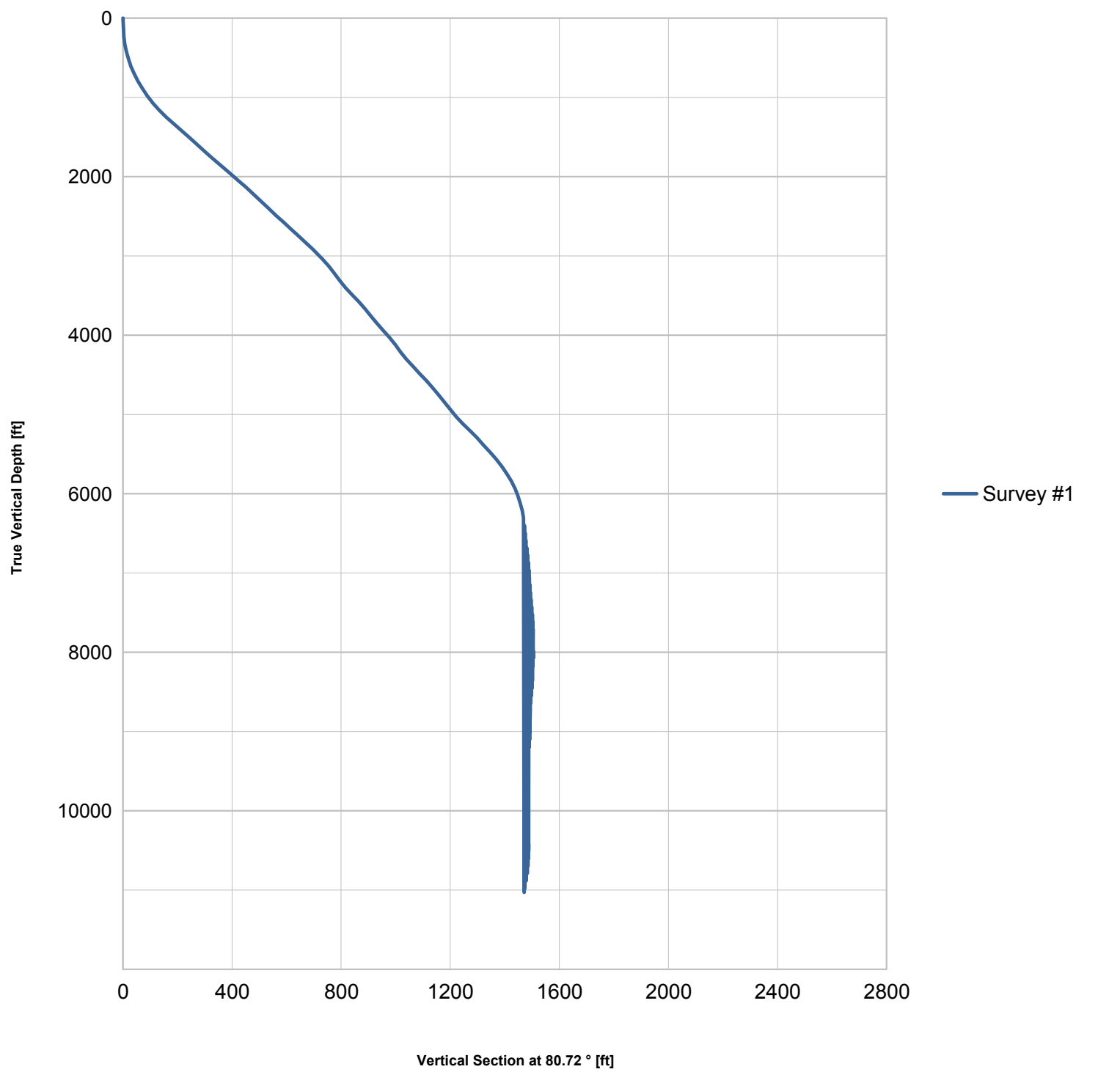
Date	Type	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLS (°/100ft)	Build Rate (°/100ft)	Turn (°/100ft)	TFace (°)
3/27/2011	NORMAL	2,010.0	18.90	81.70	1,957.44	60.55	387.17	391.87	0.58	0.54	0.65	21.28
	NORMAL	2,102.0	18.50	81.50	2,044.58	64.86	416.35	421.36	0.44	-0.43	-0.22	189.01
	NORMAL	2,196.0	17.90	80.60	2,133.88	69.42	445.35	450.72	0.70	-0.64	-0.96	204.68
	NORMAL	2,289.0	16.90	79.00	2,222.62	74.34	472.72	478.52	1.19	-1.08	-1.72	204.81
	NORMAL	2,382.0	17.20	78.60	2,311.54	79.64	499.47	505.78	0.35	0.32	-0.43	338.46
	NORMAL	2,475.0	17.30	81.00	2,400.35	84.52	526.61	533.34	0.77	0.11	2.58	83.15
	NORMAL	2,568.0	17.50	80.00	2,489.10	89.11	554.04	561.15	0.39	0.22	-1.08	303.30
	NORMAL	2,662.0	18.00	80.10	2,578.62	94.06	582.26	589.81	0.53	0.53	0.11	3.54
	NORMAL	2,755.0	17.10	79.10	2,667.29	99.12	609.84	617.85	1.02	-0.97	-1.08	198.05
	NORMAL	2,848.0	17.70	80.80	2,756.04	103.96	637.23	645.65	0.85	0.65	1.83	41.09
	NORMAL	2,941.0	17.60	80.70	2,844.66	108.49	665.06	673.85	0.11	-0.11	-0.11	196.82
	NORMAL	3,015.0	16.90	80.40	2,915.33	112.10	686.70	695.79	0.95	-0.95	-0.41	187.10
5/16/2011	NORMAL	3,142.0	15.30	81.60	3,037.35	117.62	721.48	731.01	1.29	-1.26	0.94	168.83
	NORMAL	3,235.0	13.70	82.10	3,127.38	120.93	744.53	754.29	1.73	-1.72	0.54	175.77
	NORMAL	3,328.0	12.10	82.60	3,218.03	123.70	765.11	775.04	1.72	-1.72	0.54	176.25
	NORMAL	3,421.0	12.60	83.70	3,308.88	126.07	784.86	794.91	0.59	0.54	1.18	25.74
	NORMAL	3,515.0	13.60	81.10	3,400.43	128.90	805.97	816.20	1.23	1.06	-2.77	328.22
	NORMAL	3,608.0	16.00	77.10	3,490.34	133.46	829.27	839.93	2.80	2.58	-4.30	334.99
	NORMAL	3,701.0	15.60	76.10	3,579.83	139.32	853.90	865.19	0.52	-0.43	-1.08	213.76
	NORMAL	3,794.0	13.40	77.70	3,669.86	144.62	876.57	888.42	2.40	-2.37	1.72	170.45
	NORMAL	3,887.0	12.60	84.80	3,760.48	147.84	897.20	909.30	1.92	-0.86	7.63	120.04
	NORMAL	3,980.0	14.20	85.80	3,850.95	149.59	918.68	930.78	1.74	1.72	1.08	8.73
	NORMAL	4,073.0	14.70	84.00	3,941.01	151.66	941.79	953.92	0.72	0.54	-1.94	317.19
	NORMAL	4,166.0	14.80	76.70	4,030.95	155.63	965.09	977.56	2.00	0.11	-7.85	269.55
5/17/2011	NORMAL	4,259.0	11.40	73.40	4,121.52	160.99	985.46	998.53	3.74	-3.66	-3.55	190.80
	NORMAL	4,352.0	12.20	81.30	4,212.56	165.10	1,003.99	1,017.47	1.94	0.86	8.49	67.56
	NORMAL	4,445.0	14.80	82.00	4,302.98	168.24	1,025.47	1,039.18	2.80	2.80	0.75	3.94
	NORMAL	4,538.0	14.90	80.60	4,392.87	171.84	1,049.03	1,063.01	0.40	0.11	-1.51	284.90
	NORMAL	4,632.0	15.50	80.20	4,483.59	175.96	1,073.33	1,087.65	0.65	0.64	-0.43	349.89
	NORMAL	4,725.0	14.90	78.30	4,573.33	180.50	1,097.28	1,112.03	0.84	-0.65	-2.04	218.79
	NORMAL	4,818.0	14.70	81.20	4,663.25	184.73	1,120.65	1,135.77	0.82	-0.22	3.12	106.51
	NORMAL	4,912.0	12.80	81.40	4,754.55	188.11	1,142.73	1,158.11	2.02	-2.02	0.21	178.66
	NORMAL	5,005.0	12.90	80.70	4,845.22	191.33	1,163.16	1,178.79	0.20	0.11	-0.75	302.37
	NORMAL	5,099.0	13.10	81.70	4,936.81	194.56	1,184.06	1,199.94	0.32	0.21	1.06	48.85
	NORMAL	5,192.0	13.90	81.90	5,027.24	197.66	1,205.55	1,221.64	0.86	0.86	0.22	3.44
	NORMAL	5,284.0	16.50	82.90	5,116.02	200.83	1,229.46	1,245.75	2.84	2.83	1.09	6.24
5/18/2011	NORMAL	5,378.0	17.30	79.80	5,205.96	204.95	1,256.46	1,273.07	1.28	0.85	-3.30	310.11
	NORMAL	5,471.0	14.20	80.50	5,295.45	209.29	1,281.33	1,298.31	3.34	-3.33	0.75	176.83
	NORMAL	5,565.0	14.90	81.00	5,386.44	213.08	1,304.63	1,321.92	0.76	0.74	0.53	10.42
	NORMAL	5,658.0	15.20	80.50	5,476.25	216.96	1,328.47	1,346.07	0.35	0.32	-0.54	336.36
	NORMAL	5,751.0	13.50	80.90	5,566.34	220.69	1,351.21	1,369.12	1.83	-1.83	0.43	176.86
	NORMAL	5,845.0	12.00	81.40	5,658.02	223.89	1,371.71	1,389.86	1.60	-1.60	0.53	176.04
	NORMAL	5,938.0	10.60	83.60	5,749.22	226.29	1,389.77	1,408.07	1.57	-1.51	2.37	163.96
	NORMAL	6,032.0	9.50	84.50	5,841.78	227.99	1,406.08	1,424.45	1.18	-1.17	0.96	172.32
	NORMAL	6,125.0	6.90	79.70	5,933.82	229.73	1,419.22	1,437.69	2.89	-2.80	-5.16	192.39
	NORMAL	6,219.0	5.90	82.40	6,027.23	231.38	1,429.57	1,448.17	1.11	-1.06	2.87	164.59
	NORMAL	6,312.0	5.10	86.30	6,119.80	232.28	1,438.43	1,457.06	0.95	-0.86	4.19	156.89
	NORMAL	6,407.0	3.70	71.60	6,214.52	233.52	1,445.55	1,464.29	1.88	-1.47	-15.47	211.68
	NORMAL	6,500.0	2.00	79.50	6,307.41	234.76	1,450.00	1,468.88	1.87	-1.83	8.49	170.91
5/18/2011	NORMAL	6,594.0	1.80	84.50	6,401.35	235.20	1,453.08	1,471.99	0.28	-0.21	5.32	142.83
	NORMAL	6,687.0	1.10	103.70	6,494.32	235.13	1,455.40	1,474.27	0.91	-0.75	20.65	154.58
	NORMAL	6,781.0	2.30	60.10	6,588.28	235.86	1,457.91	1,476.86	1.79	1.28	-46.38	289.64
	NORMAL	6,874.0	2.50	62.50	6,681.20	237.72	1,461.33	1,480.54	0.24	0.22	2.58	27.88
	NORMAL	6,967.0	1.90	61.30	6,774.13	239.40	1,464.48	1,483.92	0.65	-0.65	-1.29	183.79
	NORMAL	7,060.0	1.50	58.10	6,867.09	240.78	1,466.87	1,486.50	0.44	-0.43	-3.44	191.76
	NORMAL	7,153.0	0.70	53.70	6,960.07	241.76	1,468.36	1,488.13	0.86	-0.86	-4.73	183.83
	NORMAL	7,247.0	1.50	94.30	7,054.06	242.01	1,470.05	1,489.83	1.14	0.85	43.19	65.79

2.1.2 Survey Stations (Continued)

Date	Type	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLS (°/100ft)	Build Rate (°/100ft)	Turn (°/100ft)	TFace (°)
5/18/2011	NORMAL	7,339.0	1.60	126.00	7,146.03	241.16	1,472.29	1,491.91	0.93	0.11	34.46	99.36
	NORMAL	7,433.0	0.90	110.40	7,240.00	240.14	1,474.04	1,493.47	0.82	-0.74	-16.60	198.27
	NORMAL	7,526.0	2.10	58.00	7,332.97	240.78	1,476.17	1,495.68	1.84	1.29	-56.34	282.92
	NORMAL	7,620.0	1.50	78.10	7,426.93	241.95	1,478.83	1,498.50	0.92	-0.64	21.38	143.29
	NORMAL	7,714.0	2.00	40.00	7,520.89	243.46	1,481.09	1,500.97	1.32	0.53	-40.53	273.44
	NORMAL	7,808.0	1.40	27.50	7,614.84	245.74	1,482.68	1,502.90	0.75	-0.64	-13.30	205.57
	NORMAL	7,901.0	0.70	28.60	7,707.83	247.24	1,483.47	1,503.93	0.75	-0.75	1.18	178.90
	NORMAL	7,994.0	0.30	306.00	7,800.83	247.88	1,483.55	1,504.11	0.78	-0.43	-88.82	204.22
	NORMAL	8,087.0	1.70	6.30	7,893.81	249.40	1,483.50	1,504.31	1.69	1.51	64.84	69.83
5/19/2011	NORMAL	8,181.0	1.60	2.50	7,987.77	252.10	1,483.71	1,504.95	0.16	-0.11	-4.04	225.69
	NORMAL	8,274.0	1.40	326.50	8,080.74	254.34	1,483.14	1,504.75	1.02	-0.22	-38.71	240.41
	NORMAL	8,368.0	1.70	280.60	8,174.71	255.55	1,481.14	1,502.96	1.32	0.32	-48.83	259.93
	NORMAL	8,462.0	0.40	206.20	8,268.69	255.52	1,479.62	1,501.46	1.74	-1.38	-79.15	193.60
	NORMAL	8,554.0	0.50	204.90	8,360.69	254.86	1,479.31	1,501.05	0.11	0.11	-1.41	353.52
	NORMAL	8,646.0	1.10	232.80	8,452.68	253.97	1,478.44	1,500.04	0.76	0.65	30.33	47.47
	NORMAL	8,741.0	1.80	232.00	8,547.65	252.50	1,476.54	1,497.93	0.74	0.74	-0.84	357.94
	NORMAL	8,834.0	1.80	239.90	8,640.61	250.86	1,474.12	1,495.28	0.27	0.00	8.49	93.95
	NORMAL	8,927.0	1.10	216.60	8,733.58	249.42	1,472.33	1,493.28	0.97	-0.75	-25.05	208.85
	NORMAL	9,021.0	0.80	335.10	8,827.57	249.29	1,471.51	1,492.45	1.74	-0.32	126.06	154.61
	NORMAL	9,115.0	0.40	342.70	8,921.56	250.19	1,471.14	1,492.23	0.43	-0.43	8.09	172.53
	NORMAL	9,208.0	0.40	316.30	9,014.56	250.74	1,470.82	1,492.00	0.20	0.00	-28.39	256.80
	NORMAL	9,300.0	0.90	240.10	9,106.56	250.61	1,469.97	1,491.14	0.97	0.54	-82.83	258.03
	NORMAL	9,393.0	2.00	242.60	9,199.53	249.50	1,467.90	1,488.92	1.18	1.18	2.69	4.54
	NORMAL	9,487.0	2.70	259.90	9,293.45	248.36	1,464.26	1,485.15	1.05	0.74	18.40	54.24
5/20/2011	NORMAL	9,582.0	3.30	282.80	9,388.32	248.57	1,459.39	1,480.37	1.40	0.63	24.11	75.15
	NORMAL	9,676.0	2.20	285.00	9,482.21	249.64	1,455.01	1,476.22	1.18	-1.17	2.34	175.62
	NORMAL	9,769.0	1.40	256.70	9,575.17	249.84	1,452.18	1,473.46	1.26	-0.86	-30.43	214.46
5/21/2011	NORMAL	9,863.0	1.70	259.50	9,669.13	249.32	1,449.69	1,470.92	0.33	0.32	2.98	15.57
	NORMAL	9,956.0	1.30	17.80	9,762.11	250.07	1,448.66	1,470.02	2.78	-0.43	127.20	153.70
	NORMAL	10,050.0	2.10	51.90	9,856.07	252.15	1,450.34	1,472.02	1.34	0.85	36.28	69.54
	NORMAL	10,144.0	3.00	76.80	9,949.98	253.78	1,454.09	1,475.98	1.50	0.96	26.49	63.79
	NORMAL	10,238.0	2.00	85.70	10,043.89	254.46	1,458.12	1,480.07	1.14	-1.06	9.47	163.19
	NORMAL	10,332.0	1.60	118.90	10,137.85	253.95	1,460.90	1,482.74	1.17	-0.43	35.32	127.04
	NORMAL	10,425.0	1.30	104.40	10,230.82	253.06	1,463.06	1,484.72	0.51	-0.32	-15.59	223.63
	NORMAL	10,518.0	1.20	59.90	10,323.80	253.28	1,464.93	1,486.60	1.02	-0.11	-47.85	242.17
	NORMAL	10,612.0	0.40	28.90	10,417.79	254.07	1,465.94	1,487.72	0.94	-0.85	-32.98	193.52
5/22/2011	NORMAL	10,705.0	0.20	240.90	10,510.79	254.27	1,465.95	1,487.77	0.62	-0.22	-159.14	190.54
	NORMAL	10,798.0	1.10	234.80	10,603.78	253.68	1,465.08	1,486.81	0.97	0.97	-6.56	352.55
	NORMAL	10,891.0	1.20	250.10	10,696.76	252.83	1,463.44	1,485.05	0.35	0.11	16.45	79.71
	NORMAL	10,985.0	2.40	237.90	10,790.72	251.45	1,460.84	1,482.27	1.33	1.28	-12.98	336.13
	NORMAL	11,079.0	2.90	240.20	10,884.62	249.22	1,457.11	1,478.23	0.54	0.53	2.45	13.16
	NORMAL	11,170.0	3.30	234.70	10,975.48	246.57	1,452.98	1,473.72	0.55	0.44	-6.04	320.60
	NORMAL	11,225.0	3.30	234.70	11,030.39	244.74	1,450.39	1,470.88	0.00	0.00	0.00	0.00

3 Charts

3.1 Vertical Section View



3.2 Plan View

