

## 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	RGU 41-1-298	Wellbore No.	
Well Name	FEDERAL RGU 41-1-298	Common Name	RGU 41-1-298
Project	RG 01-02S-098W	Site	RGU 41-1-298 PAD
Vertical Section Azimuth	354.37 (°)	North Reference	True
Origin N/S		Origin E/W	
Spud Date	11/1/2011	UWI	RGU 41-1-298
Active Datum	KB @6,594.0ft (above Mean Sea Level)		

## 2 Survey Name

### 2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	Cathedral
Date Started	11/1/2011	Ended	
Tool Name	MWD	Engineer	Chris McCain

#### 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 (°)
11/1/2011	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/1/2011	NORMAL	185.0	1.30	359.60	184.98	2.10	-0.01	2.09	0.70	0.70	0.00	359.60
	NORMAL	248.0	2.70	355.80	247.94	4.29	-0.13	4.29	2.23	2.22	-6.03	352.69
	NORMAL	340.0	4.10	357.20	339.78	9.74	-0.45	9.74	1.52	1.52	1.52	4.09
	NORMAL	432.0	5.60	345.40	431.45	17.37	-1.74	17.46	1.95	1.63	-12.83	320.40
	NORMAL	525.0	6.30	346.80	523.95	26.73	-4.05	27.00	0.77	0.75	1.51	12.41
	NORMAL	617.0	6.20	1.80	615.41	36.61	-5.05	36.93	1.77	-0.11	16.30	100.94
	NORMAL	709.0	6.50	1.70	706.84	46.78	-4.74	47.02	0.33	0.33	-0.11	357.84
11/2/2011	NORMAL	801.0	6.70	355.00	798.24	57.33	-5.05	57.55	0.86	0.22	-7.28	281.22
	NORMAL	894.0	7.00	353.30	890.57	68.36	-6.18	68.64	0.39	0.32	-1.83	325.10
	NORMAL	986.0	6.70	352.50	981.91	79.25	-7.54	79.61	0.34	-0.33	-0.87	197.25
	NORMAL	1,080.0	6.70	351.80	1,075.27	90.12	-9.03	90.57	0.09	0.00	-0.74	269.65
	NORMAL	1,175.0	6.20	355.80	1,169.67	100.72	-10.20	101.23	0.71	-0.53	4.21	140.03
	NORMAL	1,269.0	5.50	351.40	1,263.18	110.23	-11.25	110.81	0.88	-0.74	-4.68	210.47
	NORMAL	1,364.0	5.50	352.80	1,357.74	119.25	-12.50	119.90	0.14	0.00	1.47	90.70
	NORMAL	1,458.0	5.20	354.60	1,451.33	127.96	-13.46	128.67	0.37	-0.32	1.91	151.67
	NORMAL	1,553.0	5.80	356.00	1,545.90	137.04	-14.20	137.77	0.65	0.63	1.47	13.30
	NORMAL	1,648.0	5.40	358.70	1,640.44	146.29	-14.64	147.03	0.50	-0.42	2.84	147.97
	NORMAL	1,742.0	5.20	357.60	1,734.04	154.97	-14.92	155.69	0.24	-0.21	-1.17	206.39
	NORMAL	1,836.0	5.10	356.00	1,827.66	163.40	-15.39	164.12	0.19	-0.11	-1.70	234.36

## 2.1.2 Survey Stations (Continued)

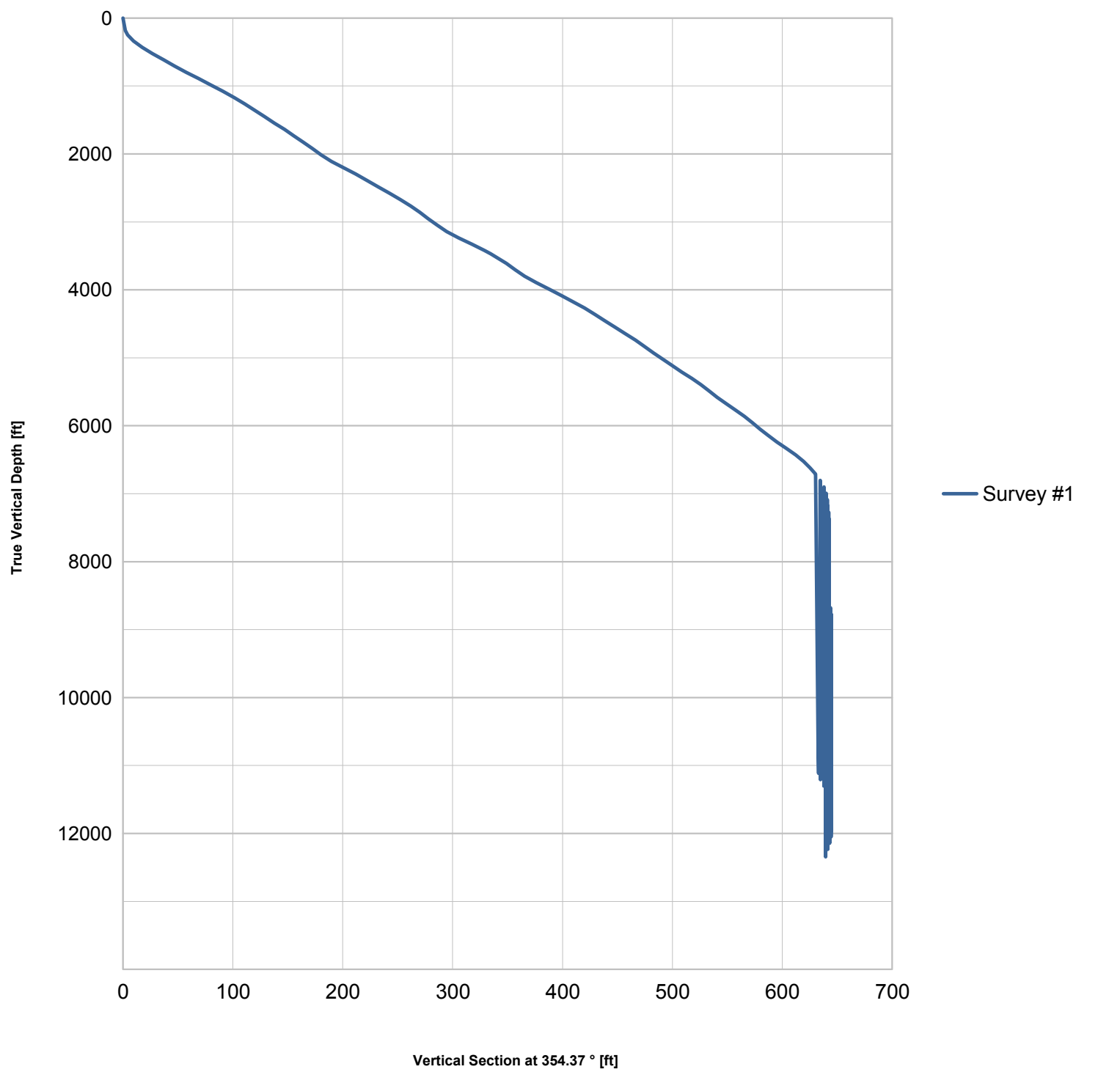
Date	Type	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLS (°/100ft)	Build Rate (°/100ft)	Turn (°/100ft)	TFace (°)
11/2/2011	NORMAL	1,931.0	5.00	356.00	1,922.29	171.74	-15.97	172.48	0.11	-0.11	0.00	180.00
	NORMAL	2,024.0	4.80	356.60	2,014.95	179.67	-16.48	180.42	0.22	-0.22	0.65	165.93
	NORMAL	2,119.0	6.50	355.00	2,109.49	188.99	-17.19	189.77	1.80	1.79	-1.68	353.91
11/3/2011	NORMAL	2,213.0	6.90	354.60	2,202.85	199.91	-18.18	200.73	0.43	0.43	-0.43	353.15
	NORMAL	2,308.0	6.50	353.60	2,297.20	210.94	-19.32	211.82	0.44	-0.42	-1.05	195.76
	NORMAL	2,403.0	6.20	356.50	2,391.61	221.40	-20.23	222.32	0.46	-0.32	3.05	134.52
	NORMAL	2,496.0	6.20	354.90	2,484.07	231.42	-20.99	232.36	0.19	0.00	-1.72	269.20
	NORMAL	2,591.0	6.20	357.40	2,578.52	241.65	-21.68	242.61	0.28	0.00	2.63	91.24
	NORMAL	2,685.0	5.80	356.20	2,672.00	251.46	-22.22	252.43	0.45	-0.43	-1.28	196.81
	NORMAL	2,780.0	5.70	352.90	2,766.52	260.93	-23.12	261.94	0.36	-0.11	-3.47	251.53
	NORMAL	2,873.0	4.70	347.70	2,859.14	269.24	-24.50	270.34	1.19	-1.08	-5.59	202.66
	NORMAL	2,967.0	4.50	348.00	2,952.84	276.61	-26.09	277.83	0.21	-0.21	0.32	173.29
	NORMAL	3,062.0	5.10	355.30	3,047.50	284.46	-27.21	285.76	0.90	0.63	7.68	49.19
	NORMAL	3,157.0	5.80	8.80	3,142.08	293.41	-26.82	294.63	1.53	0.74	14.21	68.20
	NORMAL	3,251.0	7.50	357.10	3,235.45	304.24	-26.41	305.36	2.30	1.81	-12.45	315.54
	NORMAL	3,346.0	7.20	358.30	3,329.67	316.38	-26.90	317.49	0.35	-0.32	1.26	153.49
	NORMAL	3,440.0	7.00	355.70	3,422.94	327.98	-27.50	329.09	0.40	-0.21	-2.77	236.82
	NORMAL	3,486.0	6.70	355.20	3,468.62	333.45	-27.94	334.58	0.66	-0.65	-1.09	190.99
1/3/2012	NORMAL	3,628.0	4.99	357.43	3,609.87	347.87	-28.91	349.03	1.21	-1.20	1.57	173.54
	NORMAL	3,722.0	4.64	344.01	3,703.54	355.61	-30.14	356.85	1.25	-0.37	-14.28	246.13
	NORMAL	3,817.0	6.07	346.96	3,798.13	364.20	-32.33	365.61	1.53	1.51	3.11	12.37
	NORMAL	3,911.0	6.79	347.25	3,891.54	374.46	-34.68	376.06	0.77	0.77	0.31	2.73
	NORMAL	4,007.0	6.77	353.46	3,986.87	385.62	-36.57	387.35	0.76	-0.02	6.47	94.64
	NORMAL	4,101.0	6.83	351.87	4,080.20	396.66	-38.00	398.47	0.21	0.06	-1.69	286.89
1/4/2012	NORMAL	4,197.0	6.34	358.07	4,175.57	407.60	-38.98	409.46	0.90	-0.51	6.46	127.63
	NORMAL	4,291.0	6.60	358.91	4,268.97	418.19	-39.26	420.03	0.29	0.28	0.89	20.42
	NORMAL	4,386.0	5.19	357.94	4,363.47	427.95	-39.52	429.76	1.49	-1.48	-1.02	183.56
	NORMAL	4,480.0	5.60	350.76	4,457.05	436.72	-40.41	438.58	0.84	0.44	-7.64	297.66
	NORMAL	4,575.0	5.64	350.04	4,551.60	445.89	-41.96	447.86	0.09	0.04	-0.76	299.21
	NORMAL	4,669.0	5.85	358.73	4,645.13	455.23	-42.86	457.24	0.95	0.22	9.24	80.78
	NORMAL	4,764.0	5.10	358.80	4,739.69	464.30	-43.06	466.28	0.79	-0.79	0.07	179.52
	NORMAL	4,858.0	4.90	352.74	4,833.33	472.45	-43.65	474.46	0.60	-0.21	-6.45	246.26
	NORMAL	4,953.0	5.24	342.20	4,927.96	480.61	-45.49	482.75	1.04	0.36	-11.09	284.75
	NORMAL	5,046.0	5.52	344.35	5,020.56	488.96	-48.00	491.31	0.37	0.30	2.31	36.83
	NORMAL	5,141.0	4.93	347.29	5,115.16	497.34	-50.13	499.86	0.68	-0.62	3.09	157.05
	NORMAL	5,236.0	5.78	2.41	5,209.75	506.10	-50.83	508.65	1.73	0.89	15.92	66.61
	NORMAL	5,330.0	5.28	0.58	5,303.31	515.16	-50.58	517.64	0.56	-0.53	-1.95	198.52
	NORMAL	5,424.0	4.96	2.35	5,396.94	523.54	-50.37	525.96	0.38	-0.34	1.88	154.61
	NORMAL	5,518.0	4.22	359.61	5,490.63	531.06	-50.23	533.43	0.82	-0.79	-2.91	195.14
	NORMAL	5,612.0	4.84	356.20	5,584.34	538.48	-50.52	540.84	0.72	0.66	-3.63	334.81
	NORMAL	5,707.0	5.33	3.33	5,678.97	546.88	-50.52	549.20	0.84	0.52	7.51	55.80
	NORMAL	5,801.0	5.05	359.34	5,772.58	555.38	-50.32	557.64	0.49	-0.30	-4.24	230.22
	NORMAL	5,891.0	4.84	359.08	5,862.25	563.13	-50.43	565.37	0.23	-0.23	-0.29	185.96
	NORMAL	5,986.0	4.30	355.80	5,956.95	570.69	-50.75	572.92	0.63	-0.57	-3.45	204.20
	NORMAL	6,079.0	4.22	351.53	6,049.69	577.56	-51.51	579.82	0.35	-0.09	-4.59	253.72
	NORMAL	6,174.0	4.57	352.93	6,144.41	584.77	-52.49	587.10	0.39	0.37	1.47	17.74
	NORMAL	6,270.0	5.08	353.32	6,240.07	592.79	-53.46	595.17	0.53	0.53	0.41	3.87
1/5/2012	NORMAL	6,364.0	5.21	355.63	6,333.69	601.17	-54.26	603.60	0.26	0.14	2.46	59.04
	NORMAL	6,461.0	4.80	357.08	6,430.32	609.62	-54.81	612.06	0.44	-0.42	1.49	163.57
	NORMAL	6,555.0	4.00	352.25	6,524.04	616.80	-55.45	619.26	0.94	-0.85	-5.14	202.46
	NORMAL	6,648.0	3.32	353.03	6,616.85	622.68	-56.21	625.19	0.73	-0.73	0.84	176.20
	NORMAL	6,741.0	2.83	352.54	6,709.72	627.63	-56.84	630.18	0.53	-0.53	-0.53	182.83
	NORMAL	6,835.0	2.35	349.90	6,803.62	631.83	-57.48	634.42	0.53	-0.51	-2.81	192.64
	NORMAL	6,930.0	1.87	14.05	6,898.56	635.25	-57.44	637.82	1.05	-0.51	25.42	130.07
	NORMAL	7,024.0	1.58	59.47	6,992.52	637.40	-55.95	639.81	1.45	-0.31	48.32	124.06
	NORMAL	7,116.0	1.40	61.22	7,084.49	638.58	-53.88	640.79	0.20	-0.20	1.90	166.69
	NORMAL	7,210.0	0.98	71.59	7,178.47	639.39	-52.11	641.42	0.50	-0.45	11.03	157.97

## 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 (°)
1/5/2012	NORMAL	7,304.0	1.13	54.47	7,272.45	640.18	-50.59	642.06	0.37	0.16	-18.21	286.72
	NORMAL	7,397.0	0.26	121.96	7,365.45	640.60	-49.67	642.39	1.14	-0.94	72.57	166.88
	NORMAL	7,491.0	0.48	181.24	7,459.44	640.10	-49.49	641.86	0.44	0.23	63.06	92.05
	NORMAL	7,584.0	1.00	211.37	7,552.44	639.01	-49.92	640.83	0.68	0.56	32.40	52.52
	NORMAL	7,678.0	0.21	253.96	7,646.43	638.27	-50.52	640.14	0.91	-0.84	45.31	170.46
	NORMAL	7,771.0	0.41	204.92	7,739.43	637.92	-50.82	639.83	0.34	0.22	-52.73	280.75
	NORMAL	7,865.0	0.48	144.74	7,833.43	637.29	-50.73	639.19	0.48	0.07	-64.02	247.64
	NORMAL	7,959.0	0.54	162.84	7,927.42	636.55	-50.38	638.42	0.18	0.06	19.26	78.78
	NORMAL	8,053.0	1.12	178.69	8,021.41	635.21	-50.23	637.07	0.66	0.62	16.86	29.65
	NORMAL	8,147.0	1.11	207.95	8,115.40	633.48	-50.63	635.39	0.60	-0.01	31.13	105.61
1/6/2012	NORMAL	8,241.0	1.10	287.98	8,209.38	632.96	-51.92	635.00	1.51	-0.01	85.14	130.32
	NORMAL	8,335.0	1.65	320.87	8,303.36	634.28	-53.63	636.49	1.00	0.59	34.99	72.32
	NORMAL	8,428.0	1.19	320.29	8,396.33	636.07	-55.09	638.40	0.49	-0.49	-0.62	181.50
	NORMAL	8,522.0	1.20	24.81	8,490.31	637.71	-55.30	640.06	1.36	0.01	68.64	121.87
	NORMAL	8,616.0	1.62	35.16	8,584.28	639.69	-54.12	641.91	0.52	0.45	11.01	36.47
	NORMAL	8,710.0	1.23	23.17	8,678.25	641.70	-52.96	643.80	0.52	-0.41	-12.76	211.51
	NORMAL	8,804.0	1.17	94.33	8,772.24	642.56	-51.61	644.52	1.49	-0.06	75.70	127.58
	NORMAL	8,897.0	1.10	94.74	8,865.22	642.41	-49.77	644.20	0.08	-0.08	0.44	173.59
	NORMAL	8,991.0	0.46	128.16	8,959.21	642.11	-48.57	643.77	0.81	-0.68	35.55	160.51
	NORMAL	9,084.0	0.69	195.37	9,052.21	641.34	-48.43	642.99	0.71	0.25	72.27	106.85
	NORMAL	9,178.0	1.06	200.79	9,146.20	639.98	-48.89	641.69	0.40	0.39	5.77	15.33
	NORMAL	9,271.0	1.22	212.63	9,239.18	638.34	-49.73	640.14	0.31	0.17	12.73	61.83
	NORMAL	9,365.0	0.88	213.22	9,333.16	636.89	-50.66	638.79	0.36	-0.36	0.63	178.47
	NORMAL	9,458.0	1.49	233.84	9,426.14	635.58	-52.03	637.62	0.79	0.66	22.17	45.56
	NORMAL	9,551.0	1.41	251.24	9,519.11	634.50	-54.09	636.75	0.48	-0.09	18.71	108.92
1/7/2012	NORMAL	9,644.0	1.95	14.63	9,612.09	635.66	-54.77	637.97	3.19	0.58	132.68	146.74
	NORMAL	9,738.0	2.19	45.82	9,706.03	638.46	-53.08	640.59	1.21	0.26	33.18	93.85
	NORMAL	9,832.0	1.19	40.70	9,799.99	640.45	-51.16	642.38	1.07	-1.06	-5.45	186.03
	NORMAL	9,925.0	1.28	74.87	9,892.97	641.46	-49.52	643.22	0.79	0.10	36.74	100.32
	NORMAL	10,019.0	0.90	113.24	9,986.96	641.44	-47.83	643.04	0.85	-0.40	40.82	135.79
	NORMAL	10,113.0	1.61	118.12	10,080.93	640.53	-45.99	641.95	0.76	0.76	5.19	11.01
	NORMAL	10,207.0	2.05	184.68	10,174.89	638.23	-44.96	639.56	2.17	0.47	70.81	112.89
	NORMAL	10,301.0	2.18	229.83	10,268.84	635.40	-46.46	636.89	1.73	0.14	48.03	108.33
	NORMAL	10,395.0	0.94	259.81	10,362.80	634.11	-48.59	635.82	1.54	-1.32	31.89	161.02
	NORMAL	10,489.0	1.17	252.89	10,456.79	633.69	-50.27	635.57	0.28	0.24	-7.36	327.53
1/8/2012	NORMAL	10,583.0	1.79	224.20	10,550.75	632.36	-52.21	634.43	1.01	0.66	-30.52	294.98
	NORMAL	10,677.0	1.36	238.56	10,644.72	630.72	-54.18	632.99	0.62	-0.46	15.28	144.48
	NORMAL	10,771.0	1.19	268.61	10,738.70	630.12	-56.11	632.58	0.72	-0.18	31.97	118.97
	NORMAL	10,865.0	1.48	288.59	10,832.67	630.48	-58.24	633.15	0.58	0.31	21.26	68.33
	NORMAL	10,959.0	0.53	233.27	10,926.66	630.61	-59.74	633.42	1.34	-1.01	-58.85	200.30
	NORMAL	11,053.0	0.64	107.43	11,020.66	630.19	-59.58	632.99	1.11	0.12	-133.87	209.83
	NORMAL	11,147.0	0.87	70.32	11,114.65	630.27	-58.41	632.96	0.56	0.24	-39.48	275.85
	NORMAL	11,241.0	2.12	24.14	11,208.62	632.10	-57.03	634.64	1.75	1.33	-49.13	291.36
	NORMAL	11,335.0	2.33	20.35	11,302.55	635.48	-55.65	637.87	0.27	0.22	-4.03	323.08
	NORMAL	11,429.0	1.29	34.69	11,396.50	638.14	-54.38	640.40	1.20	-1.11	15.26	163.52
1/9/2012	NORMAL	11,522.0	0.40	319.81	11,489.49	639.25	-54.00	641.46	1.34	-0.96	-80.52	198.04
	NORMAL	11,616.0	0.59	247.21	11,583.49	639.31	-54.66	641.59	0.64	0.20	-77.23	248.34
	NORMAL	11,709.0	0.85	353.71	11,676.48	639.81	-55.17	642.14	1.25	0.28	114.52	135.57
	NORMAL	11,803.0	0.79	339.92	11,770.47	641.11	-55.47	643.46	0.22	-0.06	-14.67	246.27
	NORMAL	11,897.0	0.97	293.61	11,864.46	642.04	-56.42	644.48	0.76	0.19	-49.27	260.30
	NORMAL	11,990.0	1.70	261.71	11,957.44	642.16	-58.51	644.80	1.09	0.78	-34.30	297.79
	NORMAL	12,084.0	2.55	250.54	12,051.37	641.26	-61.86	644.23	1.00	0.90	-11.88	328.37
	NORMAL	12,177.0	3.47	247.78	12,144.24	639.51	-66.42	642.94	1.00	0.99	-2.97	349.67
	NORMAL	12,267.0	3.47	247.78	12,234.08	637.45	-71.46	641.38	0.00	0.00	0.00	0.00
	NORMAL	12,378.0	3.47	247.78	12,344.87	634.90	-77.68	639.46	0.00	0.00	0.00	0.00

3 Charts

3.1 Vertical Section View



3.2 Plan View

