

## 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 334-24-198	Wellbore No.	OH
Well Name	FEDERAL RGU 334-24-198	Common Name	RGU 334-24-198
Project	RG 25-01S-098W	Site	RGU 31-25-198 Pad
Vertical Section Azimuth	1.36 (°)	North Reference	True
Origin N/S		Origin E/W	
Spud Date	2/8/2011	UWI	RGU 334-24-198
Active Datum	KELLY BUSHING @6,661.0ft (above Mean Sea Level)		

## 2 Survey Name

### 2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	Cathedral
Date Started	2/8/2011	Ended	
Tool Name	MWD	Engineer	Jeremy Davis

#### 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 (°)
2/8/2011	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/8/2011	NORMAL	303.0	2.20	16.10	302.93	5.59	1.61	5.63	0.73	0.73	0.00	16.10
	NORMAL	395.0	4.50	9.80	394.76	10.84	2.72	10.90	2.53	2.50	-6.85	347.75
	NORMAL	488.0	6.10	14.80	487.36	19.22	4.60	19.32	1.79	1.72	5.38	18.60
	NORMAL	580.0	7.30	21.50	578.73	29.38	7.99	29.56	1.55	1.30	7.28	36.44
	NORMAL	672.0	6.80	7.40	670.04	40.22	10.84	40.47	1.95	-0.54	-15.33	246.96
	NORMAL	764.0	6.50	355.20	761.43	50.81	11.10	51.06	1.57	-0.33	-13.26	252.00
	NORMAL	856.0	6.80	355.30	852.81	61.43	10.22	61.65	0.33	0.33	0.11	2.26
	NORMAL	949.0	7.20	354.60	945.12	72.72	9.22	72.92	0.44	0.43	-0.75	347.61
	NORMAL	1,043.0	8.20	353.40	1,038.27	85.24	7.89	85.41	1.08	1.06	-1.28	350.27
	NORMAL	1,137.0	9.10	356.00	1,131.20	99.32	6.61	99.45	1.04	0.96	2.77	24.77
	NORMAL	1,232.0	9.70	354.30	1,224.92	114.77	5.29	114.87	0.70	0.63	-1.79	334.33
	NORMAL	1,326.0	8.40	0.50	1,317.75	129.52	4.56	129.59	1.73	-1.38	6.60	146.16
	NORMAL	1,420.0	8.60	1.70	1,410.72	143.41	4.83	143.49	0.28	0.21	1.28	42.16
	NORMAL	1,515.0	8.30	1.30	1,504.69	157.37	5.19	157.45	0.32	-0.32	-0.42	190.89
	NORMAL	1,609.0	8.40	1.20	1,597.69	171.01	5.49	171.10	0.11	0.11	-0.11	351.69
2/9/2011	NORMAL	1,704.0	8.70	357.50	1,691.64	185.13	5.32	185.20	0.66	0.32	-3.89	296.77
	NORMAL	1,799.0	8.30	359.10	1,785.59	199.16	4.90	199.22	0.49	-0.42	1.68	150.20
	NORMAL	1,893.0	8.50	357.10	1,878.59	212.89	4.45	212.93	0.38	0.21	-2.13	303.40
	NORMAL	1,988.0	8.60	356.90	1,972.53	226.99	3.71	227.01	0.11	0.11	-0.21	343.34

## 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 (°)
2/9/2011	NORMAL	2,082.0	8.90	1.60	2,065.44	241.28	3.53	241.29	0.82	0.32	5.00	69.57
	NORMAL	2,175.0	9.30	2.20	2,157.27	255.98	4.02	256.00	0.44	0.43	0.65	13.64
	NORMAL	2,269.0	8.90	3.80	2,250.08	270.82	4.79	270.86	0.50	-0.43	1.70	148.47
	NORMAL	2,363.0	8.80	5.40	2,342.96	285.24	5.95	285.30	0.28	-0.11	1.70	112.90
	NORMAL	2,458.0	9.40	10.60	2,436.77	300.10	8.06	300.20	1.07	0.63	5.47	56.47
	NORMAL	2,550.0	9.80	13.50	2,527.48	315.10	11.27	315.27	0.68	0.43	3.15	51.84
	NORMAL	2,645.0	9.50	2.40	2,621.15	330.79	13.49	331.02	1.98	-0.32	-11.68	255.40
	NORMAL	2,739.0	10.10	2.30	2,713.77	346.78	14.14	347.02	0.64	0.64	-0.11	358.33
	NORMAL	2,834.0	11.00	4.60	2,807.17	364.14	15.20	364.39	1.05	0.95	2.42	26.21
	NORMAL	2,928.0	11.30	6.40	2,899.39	382.23	16.95	382.52	0.49	0.32	1.91	50.13
2/10/2011	NORMAL	3,023.0	10.60	0.40	2,992.67	400.21	18.05	400.53	1.41	-0.74	-6.32	235.52
	NORMAL	3,117.0	8.00	355.40	3,085.42	415.38	17.58	415.68	2.89	-2.77	-5.32	194.81
	NORMAL	3,211.0	7.00	355.10	3,178.62	427.61	16.57	427.88	1.06	-1.06	-0.32	182.09
	NORMAL	3,305.0	6.40	352.30	3,271.98	438.51	15.38	438.75	0.73	-0.64	-2.98	207.18
	NORMAL	3,400.0	6.00	353.70	3,366.42	448.69	14.12	448.90	0.45	-0.42	1.47	159.99
	NORMAL	3,494.0	6.10	358.40	3,459.90	458.57	13.45	458.76	0.54	0.11	5.00	80.93
	NORMAL	3,588.0	6.40	359.20	3,553.34	468.80	13.23	468.98	0.33	0.32	0.85	16.59
	NORMAL	3,682.0	6.60	4.40	3,646.74	479.42	13.57	479.61	0.66	0.21	5.53	73.83
	NORMAL	3,777.0	7.00	6.70	3,741.07	490.62	14.67	490.83	0.51	0.42	2.42	35.39
	NORMAL	3,870.0	6.90	6.00	3,833.38	501.80	15.91	502.04	0.14	-0.11	-0.75	219.92
2/13/2011	NORMAL	4,051.0	4.90	7.90	4,013.42	520.27	18.11	520.55	1.11	-1.10	1.05	175.37
	NORMAL	4,146.0	3.30	9.50	4,108.17	526.99	19.12	527.29	1.69	-1.68	1.68	176.71
	NORMAL	4,240.0	3.80	353.00	4,201.99	532.75	19.19	533.05	1.20	0.53	-17.55	287.69
2/14/2011	NORMAL	4,335.0	4.60	356.60	4,296.74	539.67	18.58	539.96	0.89	0.84	3.79	20.04
	NORMAL	4,430.0	2.80	341.80	4,391.54	545.68	17.63	545.95	2.13	-1.89	-15.58	200.70
	NORMAL	4,524.0	3.90	354.10	4,485.38	551.04	16.58	551.28	1.39	1.17	13.09	39.40
	NORMAL	4,619.0	5.10	359.60	4,580.08	558.48	16.22	558.71	1.34	1.26	5.79	22.53
	NORMAL	4,714.0	5.00	356.00	4,674.71	566.83	15.90	567.05	0.35	-0.11	-3.79	250.70
	NORMAL	4,808.0	4.30	352.10	4,768.40	574.41	15.13	574.61	0.82	-0.74	-4.15	202.37
	NORMAL	4,902.0	3.50	349.10	4,862.18	580.72	14.11	580.89	0.88	-0.85	-3.19	192.82
	NORMAL	4,997.0	3.50	354.40	4,957.01	586.45	13.27	586.60	0.34	0.00	5.58	92.65
	NORMAL	5,091.0	3.40	350.90	5,050.84	592.06	12.55	592.19	0.25	-0.11	-3.72	242.86
	NORMAL	5,185.0	3.80	359.30	5,144.65	597.93	12.08	598.04	0.70	0.43	8.94	57.07
	NORMAL	5,279.0	3.00	339.40	5,238.49	603.34	11.17	603.44	1.50	-0.85	-21.17	226.20
	NORMAL	5,374.0	2.70	350.70	5,333.37	607.88	9.94	607.94	0.67	-0.32	11.89	123.67
	NORMAL	5,468.0	2.90	358.00	5,427.26	612.44	9.49	612.49	0.43	0.21	7.77	64.39
	NORMAL	5,563.0	4.40	358.50	5,522.07	618.48	9.32	618.53	1.58	1.58	0.53	1.47
	NORMAL	5,658.0	4.30	351.40	5,616.79	625.65	8.69	625.68	0.58	-0.11	-7.47	255.95
	NORMAL	5,752.0	3.80	348.60	5,710.56	632.19	7.54	632.19	0.57	-0.53	-2.98	200.19
	NORMAL	5,847.0	4.50	350.30	5,805.31	638.95	6.29	638.92	0.75	0.74	1.79	10.82
2/15/2011	NORMAL	5,941.0	5.10	358.60	5,898.98	646.76	5.57	646.71	0.97	0.64	8.83	53.36
	NORMAL	6,036.0	5.00	6.10	5,993.61	655.10	5.91	655.05	0.70	-0.11	7.89	102.34
	NORMAL	6,130.0	4.40	4.10	6,087.29	662.77	6.60	662.74	0.66	-0.64	-2.13	194.28
	NORMAL	6,224.0	4.10	0.20	6,181.04	669.72	6.87	669.70	0.44	-0.32	-4.15	222.00
	NORMAL	6,319.0	3.50	10.70	6,275.83	675.97	7.42	675.95	0.96	-0.63	11.05	135.93
	NORMAL	6,453.0	2.80	358.20	6,409.63	683.26	8.08	683.26	0.73	-0.52	-9.33	218.33
	NORMAL	6,507.0	2.40	350.10	6,463.57	685.69	7.84	685.68	1.00	-0.74	-15.00	218.57
	NORMAL	6,602.0	1.80	0.00	6,558.51	689.14	7.50	689.13	0.74	-0.63	10.42	153.73
	NORMAL	6,697.0	1.70	359.90	6,653.46	692.04	7.50	692.03	0.11	-0.11	-0.11	181.70
	NORMAL	6,791.0	2.40	17.10	6,747.40	695.32	8.07	695.32	0.98	0.74	18.30	50.12
	NORMAL	6,886.0	2.20	18.00	6,842.33	698.95	9.22	698.98	0.21	-0.21	0.95	170.21
	NORMAL	6,981.0	1.60	9.50	6,937.27	702.00	10.00	702.04	0.70	-0.63	-8.95	200.95
	NORMAL	7,075.0	2.60	13.20	7,031.21	705.37	10.71	705.42	1.07	1.06	3.94	9.57
	NORMAL	7,170.0	1.80	12.80	7,126.14	708.92	11.53	708.99	0.84	-0.84	-0.42	180.90
2/16/2011	NORMAL	7,264.0	2.50	11.20	7,220.07	712.37	12.26	712.46	0.75	0.74	-1.70	354.30
	NORMAL	7,359.0	2.40	11.80	7,314.99	716.35	13.06	716.46	0.11	-0.11	0.63	165.91
	NORMAL	7,453.0	2.20	11.00	7,408.91	720.05	13.81	720.17	0.22	-0.21	-0.85	188.72



## 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 (°)
2/16/2011	NORMAL	7,546.0	1.50	359.20	7,501.86	723.02	14.13	723.15	0.85	-0.75	-12.69	202.74
	NORMAL	7,640.0	1.10	13.80	7,595.84	725.12	14.33	725.26	0.55	-0.43	15.53	147.52
	NORMAL	7,733.0	1.20	353.70	7,688.82	726.96	14.44	727.10	0.44	0.11	-21.61	273.74
	NORMAL	7,826.0	1.10	12.60	7,781.80	728.80	14.53	728.94	0.42	-0.11	20.32	114.09
	NORMAL	7,920.0	0.80	18.70	7,875.79	730.30	14.93	730.45	0.34	-0.32	6.49	164.40
	NORMAL	8,013.0	1.00	356.20	7,968.78	731.72	15.09	731.88	0.43	0.22	-24.19	287.94
	NORMAL	8,106.0	1.00	26.30	8,061.76	733.26	15.39	733.42	0.56	0.00	32.37	105.05
	NORMAL	8,199.0	0.40	65.80	8,154.76	734.12	16.05	734.30	0.79	-0.65	42.47	159.79
	NORMAL	8,293.0	0.40	273.80	8,248.75	734.28	16.02	734.45	0.83	0.00	-161.70	194.00
	NORMAL	8,386.0	0.30	272.60	8,341.75	734.31	15.45	734.47	0.11	-0.11	-1.29	183.59
	NORMAL	8,480.0	0.80	293.20	8,435.75	734.58	14.61	734.72	0.56	0.53	21.91	32.09
2/17/2011	NORMAL	8,574.0	0.30	286.70	8,529.74	734.91	13.77	735.03	0.54	-0.53	-6.91	183.87
	NORMAL	8,760.0	1.00	287.60	8,715.73	735.54	11.75	735.61	0.38	0.38	0.48	1.29
	NORMAL	8,854.0	0.70	252.50	8,809.72	735.62	10.42	735.66	0.62	-0.32	-37.34	223.29
	NORMAL	8,867.0	0.30	289.80	8,822.72	735.60	10.32	735.64	3.81	-3.08	286.92	158.49
	NORMAL	8,947.0	0.60	327.50	8,902.72	736.03	9.89	736.06	0.51	0.38	47.12	64.53
	NORMAL	9,040.0	0.40	310.40	8,995.71	736.65	9.39	736.66	0.27	-0.22	-18.39	208.38
	NORMAL	9,134.0	0.80	331.20	9,089.71	737.44	8.82	737.44	0.48	0.43	22.13	39.24
	NORMAL	9,227.0	0.30	7.50	9,182.70	738.25	8.54	738.24	0.63	-0.54	39.03	162.35
	NORMAL	9,321.0	0.80	71.30	9,276.70	738.70	9.19	738.71	0.77	0.53	67.87	85.76
2/18/2011	NORMAL	9,414.0	1.10	42.30	9,369.69	739.57	10.41	739.61	0.60	0.32	-31.18	286.91
	NORMAL	9,507.0	1.30	45.30	9,462.67	740.97	11.76	741.04	0.23	0.22	3.23	18.94
	NORMAL	9,601.0	1.50	46.70	9,556.64	742.57	13.41	742.68	0.22	0.21	1.49	10.41
	NORMAL	9,695.0	1.50	53.10	9,650.61	744.15	15.29	744.30	0.18	0.00	6.81	93.20
	NORMAL	9,789.0	1.30	44.90	9,744.58	745.64	17.03	745.84	0.30	-0.21	-8.72	221.00
	NORMAL	9,882.0	1.20	74.00	9,837.56	746.66	18.71	746.89	0.68	-0.11	31.29	113.31
	NORMAL	9,976.0	1.60	79.70	9,931.53	747.16	20.95	747.45	0.45	0.43	6.06	22.06
	NORMAL	10,070.0	1.10	95.50	10,025.50	747.31	23.13	747.65	0.66	-0.53	16.81	151.06
	NORMAL	10,164.0	1.00	113.00	10,119.49	746.91	24.79	747.28	0.36	-0.11	18.62	115.94
2/19/2011	NORMAL	10,259.0	1.10	109.20	10,214.47	746.28	26.41	746.70	0.13	0.11	-4.00	323.24
	NORMAL	10,353.0	1.20	144.70	10,308.45	745.18	27.83	745.63	0.75	0.11	37.77	100.01
	NORMAL	10,447.0	1.40	170.60	10,402.43	743.25	28.59	743.71	0.65	0.21	27.55	84.45
	NORMAL	10,540.0	1.00	200.00	10,495.41	741.36	28.50	741.83	0.78	-0.43	31.61	137.13
	NORMAL	10,634.0	1.20	197.30	10,589.39	739.65	27.92	740.11	0.22	0.21	-2.87	344.12
	NORMAL	10,728.0	1.40	188.10	10,683.37	737.57	27.47	738.02	0.31	0.21	-9.79	309.12
2/20/2011	NORMAL	10,822.0	1.40	180.80	10,777.34	735.29	27.29	735.73	0.19	0.00	-7.77	266.35
	NORMAL	10,916.0	1.80	182.30	10,871.30	732.67	27.22	733.11	0.43	0.43	1.60	6.73
	NORMAL	11,009.0	1.40	184.70	10,964.27	730.07	27.06	730.51	0.44	-0.43	2.58	171.69
	NORMAL	11,103.0	1.00	247.50	11,058.25	728.62	26.21	729.03	1.38	-0.43	66.81	136.67
2/21/2011	NORMAL	11,197.0	1.40	252.50	11,152.23	727.96	24.36	728.33	0.44	0.43	5.32	17.18
	NORMAL	11,290.0	1.40	260.90	11,245.20	727.44	22.15	727.76	0.22	0.00	9.03	94.20
	NORMAL	11,364.0	1.00	259.30	11,319.19	727.17	20.63	727.46	0.54	-0.54	-2.16	183.99
	NORMAL	11,478.0	0.90	201.30	11,433.17	726.15	19.32	726.41	0.81	-0.09	-50.88	235.58
	NORMAL	11,572.0	0.20	186.50	11,527.17	725.30	19.04	725.55	0.75	-0.74	-15.74	184.14
	NORMAL	11,666.0	0.40	42.80	11,621.17	725.38	19.24	725.63	0.61	0.21	-152.87	204.39
	NORMAL	11,760.0	0.70	64.70	11,715.16	725.87	19.98	726.14	0.38	0.32	23.30	46.30
	NORMAL	11,854.0	1.20	65.00	11,809.15	726.53	21.40	726.83	0.53	0.53	0.32	0.72
2/22/2011	NORMAL	11,948.0	1.10	75.50	11,903.13	727.17	23.16	727.52	0.25	-0.11	11.17	120.57
	NORMAL	12,043.0	0.90	87.60	11,998.12	727.43	24.79	727.81	0.31	-0.21	12.74	139.39
	NORMAL	12,231.0	0.60	76.60	12,186.10	727.72	27.22	728.16	0.18	-0.16	-5.85	200.21
	NORMAL	12,325.0	0.80	119.30	12,280.09	727.51	28.27	727.98	0.58	0.21	45.43	91.27
	NORMAL	12,419.0	0.60	248.80	12,374.09	727.01	28.39	727.48	1.35	-0.21	137.77	158.60
	NORMAL	12,513.0	1.00	229.00	12,468.09	727.34	28.45	726.74	1.67	1.67	0.00	229.00
2/23/2011	NORMAL	12,608.0	0.70	183.90	12,563.08	726.22	27.79	726.67	0.75	-0.32	-47.47	224.43
	NORMAL	12,702.0	0.60	165.00	12,657.07	725.17	27.87	725.63	0.25	-0.11	-20.11	235.75
	NORMAL	12,775.0	0.80	123.00	12,730.07	724.52	28.40	724.99	0.73	0.27	-57.53	269.41
	NORMAL	12,825.0	0.80	123.00	12,780.06	724.14	28.99	724.63	0.00	0.00	0.00	0.00