

## 1 General

### 1.1 Customer Information

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

### 1.2 Well/Wellbore Information

Well	RGU 23-23-198	Wellbore No.	OH
Wellbore Legal Name	RGU 23-23-198	Common Wellbore Name	RGU 23-23-198
Project	RG 23-01S-098W	Site	RGU 23-23-198 Pad
Vertical Section Azimuth	359.67 (°)	North reference	True
Origin N/S		Origin EW	
Spud date	4/1/2013	UWI	RGU 23-23-198
Active datum	KB @6,566.0ft (above Mean Sea Level)		

## 2 Survey Name

### 2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	
Date Started	4/1/2013	Ended	
Tool Name	MWD	Engineer	

#### 2.1.1 Tie On Point

MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	EW (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)	EW (ft)	V. sec. (ft)	DLS (°/100usft)	Build Rate (°/100usft)	Turn (°/100usft)	Tface (°)
4/1/2013	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/1/2013	NORMAL	178.0	1.67	353.37	177.98	2.58	-0.30	2.58	0.94	0.94	0.00	353.37
	NORMAL	209.0	1.67	350.31	208.96	3.47	-0.43	3.47	0.29	0.00	-9.87	268.47
	NORMAL	301.0	2.99	9.30	300.89	7.16	-0.27	7.16	1.64	1.43	20.64	40.04
	NORMAL	392.0	4.31	0.07	391.70	12.92	0.12	12.92	1.58	1.45	-10.14	331.35
	NORMAL	485.0	5.98	3.58	484.32	21.25	0.43	21.25	1.83	1.80	3.77	12.43
	NORMAL	577.0	6.51	2.09	575.78	31.25	0.92	31.24	0.60	0.58	-1.62	342.25
	NORMAL	669.0	6.77	3.76	667.16	41.87	1.46	41.86	0.35	0.28	1.82	37.43
	NORMAL	761.0	6.42	359.28	758.55	52.42	1.76	52.41	0.68	-0.38	-4.87	233.56
	NORMAL	853.0	6.60	359.28	849.96	62.85	1.62	62.84	0.20	0.20	0.00	0.00
	NORMAL	944.0	6.60	0.07	940.36	73.31	1.56	73.30	0.10	0.00	0.87	90.39
	NORMAL	1,042.0	6.51	359.01	1,037.71	84.50	1.48	84.49	0.15	-0.09	-1.08	232.83
	NORMAL	1,136.0	6.86	357.78	1,131.08	95.44	1.17	95.43	0.40	0.37	-1.31	337.14
	NORMAL	1,230.0	6.51	356.02	1,224.44	106.36	0.58	106.36	0.43	-0.37	-1.87	209.47
	NORMAL	1,325.0	6.60	356.46	1,318.82	117.18	-0.13	117.18	0.11	0.09	0.46	29.38
	NORMAL	1,418.0	6.33	352.86	1,411.23	127.61	-1.10	127.61	0.52	-0.29	-3.87	234.55
	NORMAL	1,512.0	6.24	348.38	1,504.66	137.75	-2.77	137.77	0.53	-0.10	-4.77	257.38
	NORMAL	1,606.0	6.24	351.54	1,598.10	147.81	-4.55	147.83	0.37	0.00	3.36	91.57
	NORMAL	1,701.0	6.60	352.60	1,692.51	158.33	-6.02	158.36	0.40	0.38	1.12	18.75
4/2/2013	NORMAL	1,795.0	7.91	0.24	1,785.76	170.16	-6.68	170.19	1.73	1.39	8.13	40.20
	NORMAL	1,890.0	8.18	359.01	1,879.82	183.45	-6.77	183.49	0.34	0.28	-1.29	326.87

## 2.1.2 Survey Stations (Continued)

Date	Type	MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. sec. (ft)	DLS (°/100usft)	Build Rate (°/100usft)	Turn (°/100usft)	Tface (°)
4/2/2013	NORMAL	1,984.0	8.44	0.51	1,972.83	197.03	-6.83	197.07	0.36	0.28	1.60	40.57
	NORMAL	2,078.0	8.71	3.32	2,065.78	211.04	-6.35	211.07	0.53	0.29	2.99	58.60
	NORMAL	2,172.0	8.97	4.37	2,158.67	225.45	-5.38	225.48	0.33	0.28	1.12	32.34
	NORMAL	2,266.0	9.06	5.87	2,251.51	240.12	-4.07	240.14	0.27	0.10	1.60	69.79
	NORMAL	2,360.0	9.76	8.15	2,344.24	255.37	-2.18	255.38	0.84	0.74	2.43	29.16
	NORMAL	2,455.0	9.85	9.82	2,437.86	271.35	0.35	271.34	0.31	0.09	1.76	73.26
	NORMAL	2,549.0	9.85	9.03	2,530.47	287.21	2.98	287.19	0.14	0.00	-0.84	269.61
	NORMAL	2,644.0	9.23	6.66	2,624.16	302.80	5.14	302.77	0.77	-0.65	-2.49	211.19
	NORMAL	2,738.0	9.58	7.36	2,716.89	318.05	7.01	318.00	0.39	0.37	0.74	18.44
	NORMAL	2,832.0	9.15	0.15	2,809.64	333.28	8.04	333.23	1.33	-0.46	-7.67	246.34
	NORMAL	2,926.0	9.23	359.89	2,902.44	348.29	8.04	348.24	0.10	0.09	-0.28	332.44
	NORMAL	3,019.0	9.06	1.30	2,994.25	363.07	8.19	363.02	0.30	-0.18	1.52	127.88
	NORMAL	3,113.0	8.53	359.01	3,087.15	377.44	8.24	377.39	0.68	-0.56	-2.44	212.32
	NORMAL	3,208.0	8.27	359.45	3,181.13	391.32	8.05	391.26	0.28	-0.27	0.46	166.33
	NORMAL	3,302.0	7.47	358.48	3,274.24	404.19	7.83	404.13	0.86	-0.85	-1.03	188.95
	NORMAL	3,395.0	7.74	348.89	3,366.43	416.38	6.47	416.33	1.38	0.29	-10.20	277.40
	NORMAL	3,490.0	8.09	347.94	3,460.53	429.19	3.85	429.16	0.40	0.37	-1.11	337.03
	NORMAL	3,584.0	7.74	345.65	3,553.63	441.79	0.90	441.78	0.50	-0.37	-2.44	220.89
	NORMAL	3,678.0	8.35	348.11	3,646.71	454.61	-2.08	454.61	0.75	0.65	2.62	30.66
	NORMAL	3,771.0	8.53	348.55	3,738.70	467.97	-4.84	467.99	0.21	0.19	0.47	19.95
	NORMAL	3,868.0	8.53	348.55	3,834.63	482.07	-7.69	482.11	0.00	0.00	0.00	0.00
6/8/2013	NORMAL	3,907.0	7.65	347.41	3,873.34	486.69	-8.81	487.49	0.66	-0.65	-0.84	189.77
	NORMAL	4,002.0	5.98	343.54	3,967.67	497.61	-11.59	497.67	1.82	-1.76	-4.07	193.46
	NORMAL	4,097.0	4.48	354.88	4,062.27	506.05	-13.33	508.12	1.91	-1.58	11.94	150.99
	NORMAL	4,191.0	3.87	345.83	4,156.03	512.79	-14.43	512.86	0.95	-0.65	-9.63	222.75
	NORMAL	4,286.0	3.96	349.17	4,250.80	519.12	-15.83	519.20	0.26	0.09	3.52	70.13
	NORMAL	4,381.0	5.19	14.22	4,345.51	526.50	-15.39	526.58	2.44	1.29	26.37	71.28
	NORMAL	4,475.0	6.42	22.48	4,439.03	535.48	-12.34	535.54	1.58	1.31	8.79	38.34
	NORMAL	4,570.0	6.77	15.71	4,533.40	545.78	-8.79	545.82	0.90	0.37	-7.13	290.85
	NORMAL	4,665.0	5.80	13.08	4,627.83	555.85	-6.19	555.87	1.06	-1.02	-2.77	195.23
	NORMAL	4,760.0	7.30	19.23	4,722.21	566.22	-3.11	566.23	1.74	1.58	6.47	28.14
	NORMAL	4,855.0	6.60	11.76	4,816.51	577.27	-0.01	577.26	1.20	-0.74	-7.86	228.58
	NORMAL	4,949.0	5.63	359.45	4,909.98	587.17	1.04	587.15	1.73	-1.03	-13.10	227.49
	NORMAL	5,044.0	6.33	5.08	5,004.46	597.04	1.46	597.02	0.96	0.74	5.93	42.78
	NORMAL	5,139.0	6.24	4.11	5,098.89	607.41	2.30	607.39	0.15	-0.09	-1.02	229.24
	NORMAL	5,233.0	6.95	359.72	5,192.27	618.19	2.64	618.17	0.93	0.76	-4.67	322.43
	NORMAL	5,328.0	5.36	351.37	5,286.72	628.33	1.94	628.31	1.92	-1.67	-8.79	205.28
6/9/2013	NORMAL	5,423.0	4.40	345.39	5,381.38	636.24	0.36	636.23	1.14	-1.01	-6.29	204.96
	NORMAL	5,517.0	6.16	8.94	5,474.98	644.71	0.23	644.70	2.93	1.87	25.05	63.05
	NORMAL	5,612.0	8.00	17.47	5,569.26	656.06	3.01	656.03	2.23	1.94	8.98	34.02
	NORMAL	5,707.0	6.77	14.92	5,663.47	667.77	6.43	667.72	1.34	-1.29	-2.68	193.66
	NORMAL	5,801.0	7.21	16.24	5,756.77	678.79	9.51	678.72	0.50	0.47	1.40	20.71
	NORMAL	5,896.0	8.44	17.03	5,850.88	691.18	13.22	691.09	1.30	1.29	0.83	5.39
	NORMAL	5,991.0	7.12	15.98	5,945.01	703.51	16.88	703.40	1.40	-1.39	-1.11	185.63
	NORMAL	6,085.0	8.00	12.46	6,038.19	715.49	19.90	715.37	1.06	0.94	-3.74	330.49
	NORMAL	6,179.0	6.86	10.00	6,131.40	727.41	22.28	727.27	1.26	-1.21	-2.62	194.37
	NORMAL	6,274.0	5.98	2.26	6,225.81	737.94	23.46	737.80	1.30	-0.93	-8.15	220.72
	NORMAL	6,369.0	6.16	359.80	6,320.27	747.99	23.64	747.84	0.33	0.19	-2.59	303.45
	NORMAL	6,476.0	5.89	359.36	6,426.68	759.22	23.56	759.07	0.26	-0.25	-0.41	189.49
	NORMAL	6,571.0	4.87	351.83	6,521.26	768.08	22.93	767.94	1.30	-1.07	-7.93	210.98
	NORMAL	6,665.0	4.04	332.29	6,614.99	774.96	20.83	774.83	1.83	-0.88	-20.79	231.82
6/10/2013	NORMAL	6,760.0	3.61	350.22	6,709.78	780.87	18.76	780.75	1.33	-0.45	18.87	118.57
	NORMAL	6,855.0	3.25	2.00	6,804.61	786.51	18.35	786.39	0.83	-0.38	12.40	122.86
	NORMAL	6,950.0	3.08	27.05	6,899.47	791.48	19.60	791.35	1.45	-0.18	26.37	109.40
	NORMAL	7,045.0	2.46	26.08	6,994.36	795.58	21.66	795.44	0.65	-0.65	-1.02	183.84
	NORMAL	7,140.0	1.97	22.33	7,089.29	798.92	23.18	798.78	0.54	-0.52	-3.95	194.61

## 2.1.2 Survey Stations (Continued)

Date	Type	MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. sec. (ft)	DLS (°/100usft)	Build Rate (°/100usft)	Turn (°/100usft)	Tface (°)
6/10/2013	NORMAL	7,234.0	1.85	18.79	7,183.23	801.85	24.28	801.70	0.18	-0.13	-3.77	222.76
	NORMAL	7,329.0	1.41	17.47	7,278.20	804.42	25.12	804.26	0.46	-0.46	-1.39	184.22
	NORMAL	7,424.0	1.31	11.64	7,373.17	806.60	25.69	806.44	0.18	-0.11	-6.14	231.25
	NORMAL	7,519.0	0.97	1.21	7,468.15	808.47	25.93	808.30	0.42	-0.36	-10.98	206.25
	NORMAL	7,614.0	0.53	352.73	7,563.14	809.71	25.89	809.54	0.48	-0.46	-8.93	189.94
	NORMAL	7,708.0	0.71	341.98	7,657.14	810.69	25.66	810.53	0.23	0.19	-11.44	321.68
	NORMAL	7,803.0	0.40	42.58	7,752.13	811.50	25.70	811.33	0.65	-0.33	63.79	145.84
	NORMAL	7,898.0	0.05	218.29	7,847.13	811.71	25.90	811.54	0.47	-0.37	184.96	179.52
	NORMAL	7,993.0	0.17	215.07	7,942.13	811.56	25.79	811.40	0.13	0.13	-3.39	355.44
	NORMAL	8,087.0	1.41	218.48	8,036.12	810.54	24.99	810.38	1.32	1.32	3.63	3.88
	NORMAL	8,174.0	1.41	218.48	8,122.99	809.68	23.95	808.71	0.00	0.00	0.00	0.00
6/11/2013	NORMAL	8,183.0	0.18	189.30	8,132.11	809.47	24.23	809.43	1.31	-1.28	-30.40	184.01
	NORMAL	8,277.0	1.23	104.48	8,226.10	809.07	25.18	808.91	1.31	1.12	-90.23	266.78
	NORMAL	8,372.0	1.49	112.13	8,321.08	808.35	27.31	808.18	0.33	0.27	8.05	38.79
	NORMAL	8,467.0	1.23	118.81	8,416.05	807.39	29.35	807.21	0.32	-0.27	7.03	151.94
	NORMAL	8,562.0	0.79	144.73	8,511.04	806.37	30.62	806.18	0.66	-0.46	27.28	146.39
	NORMAL	8,657.0	0.88	169.96	8,606.03	805.11	31.13	804.92	0.39	0.09	26.56	89.07
	NORMAL	8,751.0	0.88	204.50	8,700.02	803.74	30.96	803.55	0.56	0.00	36.74	107.27
	NORMAL	8,846.0	0.18	174.00	8,795.01	802.93	30.67	802.74	0.77	-0.74	-32.11	187.18
	NORMAL	8,941.0	0.62	242.03	8,890.01	802.54	30.23	802.36	0.61	0.46	71.61	84.84
	NORMAL	9,035.0	0.88	190.53	8,984.00	801.59	29.65	801.41	0.74	0.28	-54.79	264.02
	NORMAL	9,130.0	1.23	216.72	9,078.99	800.06	28.91	799.88	0.62	0.37	27.57	67.60
	NORMAL	9,225.0	0.62	238.07	9,173.98	798.97	27.86	798.80	0.73	-0.64	22.47	160.92
	NORMAL	9,320.0	0.35	46.39	9,268.97	798.90	27.63	798.73	1.02	-0.28	177.18	175.79
	NORMAL	9,414.0	0.26	353.83	9,362.97	799.31	27.82	799.14	0.30	-0.10	-55.91	227.08
	NORMAL	9,509.0	0.79	266.11	9,457.97	799.48	27.14	799.31	0.87	0.56	-92.34	253.85
6/12/2013	NORMAL	9,604.0	0.88	259.52	9,552.96	799.30	25.77	799.14	0.14	0.09	-6.94	309.82
	NORMAL	9,699.0	1.06	243.44	9,647.95	798.78	24.27	798.62	0.34	0.19	-16.93	295.26
	NORMAL	9,793.0	0.93	191.19	9,741.93	797.64	23.34	797.49	0.94	-0.14	-55.59	236.29
	NORMAL	9,888.0	0.44	137.09	9,836.93	796.62	23.44	796.47	0.80	-0.52	-56.95	207.94
	NORMAL	9,983.0	0.44	205.99	9,931.93	796.02	23.53	795.87	0.52	0.00	72.53	124.45
	NORMAL	10,078.0	1.06	246.60	10,026.92	795.34	22.56	795.20	0.82	0.65	42.75	62.14
	NORMAL	10,173.0	0.70	254.95	10,121.91	794.84	21.20	794.71	0.40	-0.38	8.79	164.54
	NORMAL	10,267.0	0.18	218.48	10,215.90	794.58	20.55	794.45	0.60	-0.55	-38.80	190.91
	NORMAL	10,362.0	0.44	244.67	10,310.90	794.31	20.13	794.18	0.30	0.27	27.57	42.11
	NORMAL	10,456.0	0.26	312.69	10,404.90	794.30	19.65	794.17	0.45	-0.19	72.36	144.87
	NORMAL	10,551.0	0.59	336.87	10,499.90	794.89	19.29	794.77	0.39	0.35	25.45	40.98
6/13/2013	NORMAL	10,646.0	0.74	287.50	10,594.89	795.53	18.52	795.41	0.60	0.16	-51.97	259.10
	NORMAL	10,741.0	1.56	268.75	10,689.87	795.68	16.64	795.57	0.94	0.86	-19.74	325.78
	NORMAL	10,835.0	0.62	269.72	10,783.86	795.65	14.85	795.55	1.00	-1.00	1.03	179.36
	NORMAL	10,930.0	0.35	245.72	10,878.85	795.53	14.07	795.44	0.35	-0.28	-25.26	205.37
	NORMAL	11,025.0	0.44	281.93	10,973.85	795.49	13.45	795.40	0.27	0.09	38.12	88.89
	NORMAL	11,120.0	0.70	254.60	11,068.85	795.41	12.54	795.32	0.39	0.27	-28.77	299.51
	NORMAL	11,214.0	0.88	259.43	11,162.84	795.12	11.27	795.05	0.20	0.19	5.14	22.73
	NORMAL	11,309.0	1.41	247.83	11,257.82	794.55	9.47	794.48	0.61	0.56	-12.21	330.51
	NORMAL	11,404.0	0.35	283.43	11,352.81	794.17	8.11	794.12	1.20	-1.12	37.47	169.74
	NORMAL	11,498.0	0.09	296.61	11,446.81	794.27	7.76	794.22	0.28	-0.28	14.02	175.53
	NORMAL	11,593.0	0.26	242.21	11,541.81	794.21	7.51	794.15	0.23	0.18	-57.26	286.18
6/14/2013	NORMAL	11,688.0	0.70	253.37	11,636.80	793.94	6.76	793.89	0.47	0.46	11.75	17.61
	NORMAL	11,783.0	0.97	251.35	11,731.79	793.52	5.44	793.47	0.29	0.28	-2.13	352.77
	NORMAL	11,878.0	1.06	249.06	11,826.78	792.95	3.86	792.91	0.10	0.09	-2.41	334.59
	NORMAL	11,973.0	1.06	247.57	11,921.76	792.30	2.23	792.27	0.03	0.00	-1.57	269.26
	NORMAL	12,067.0	1.23	259.87	12,015.74	791.79	0.43	791.77	0.32	0.18	13.09	61.58
	NORMAL	12,162.0	0.70	291.60	12,110.73	791.82	-1.12	791.82	0.77	-0.56	33.40	149.88
	NORMAL	12,257.0	0.70	299.25	12,205.72	792.32	-2.16	792.32	0.10	0.00	8.05	93.82
	NORMAL	12,351.0	0.95	274.23	12,299.71	792.66	-3.44	792.66	0.46	0.27	-26.62	291.82

## 2.1.2 Survey Stations (Continued)

Date	Type	MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. sec. (ft)	DLS (°/100usft)	Build Rate (°/100usft)	Turn (°/100usft)	Tface (°)
6/14/2013	NORMAL	12,446.0	1.23	254.69	12,394.70	792.45	-5.21	792.46	0.49	0.29	-20.57	296.95
6/15/2013	NORMAL	12,497.0	1.32	250.20	12,445.69	792.10	-6.29	792.13	0.26	0.18	-8.80	309.75
	NORMAL	12,546.0	1.32	250.20	12,494.67	791.72	-7.35	791.75	0.00	0.00	0.00	0.00