

## 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	RG 521-23-298	Wellbore No.	00
Wellbore Legal Name	RG 521-23-298	Common Wellbore Name	RG 521-23-298
Project	RG 14-02S-098W	Site	RG 24-14-298 Pad
Vertical Section Azimuth	189.67 (°)	North reference	
Origin N/S		Origin EW	
Spud date	9/29/2013	UWI	RG 521-23-298
Active datum	KB @6,707.0ft (above Mean Sea Level)		

## 2 Survey Name

### 2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	SDI
Date Started	9/29/2013	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 (°)
9/29/2013	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/29/2013	NORMAL	277.0	3.77	216.89	276.80	-7.29	-5.47	8.10	1.36	1.36	0.00	216.89
	NORMAL	338.0	4.54	209.15	337.64	-11.00	-7.85	12.16	1.56	1.26	-12.69	320.03
	NORMAL	430.0	4.74	201.90	429.34	-17.71	-11.04	19.31	0.67	0.22	-7.88	285.19
9/30/2013	NORMAL	523.0	6.50	198.16	521.89	-26.27	-14.11	28.27	1.93	1.89	-4.02	346.38
9/30/2013	NORMAL	615.0	8.37	195.71	613.11	-37.67	-17.55	40.08	2.06	2.03	-2.66	349.16
	NORMAL	707.0	9.48	197.08	704.00	-51.36	-21.59	54.25	1.23	1.21	1.49	11.52
	NORMAL	799.0	10.87	200.57	794.55	-66.72	-26.86	70.29	1.65	1.51	3.79	25.64
	NORMAL	892.0	12.54	204.81	885.61	-84.10	-34.18	88.64	2.02	1.80	4.56	29.34
	NORMAL	984.0	13.37	200.54	975.27	-103.12	-42.10	108.73	1.38	0.90	-4.64	308.83
	NORMAL	1,079.0	14.64	201.54	1,067.45	-124.58	-50.37	131.27	1.36	1.34	1.05	11.27
	NORMAL	1,173.0	15.46	198.55	1,158.23	-147.51	-58.71	155.27	1.20	0.87	-3.18	315.11
	NORMAL	1,268.0	16.41	199.59	1,249.57	-172.15	-67.24	181.00	1.04	1.00	1.09	17.23
	NORMAL	1,363.0	16.56	198.44	1,340.67	-197.64	-76.02	207.60	0.38	0.16	-1.21	294.13
	NORMAL	1,457.0	16.74	198.16	1,430.73	-223.21	-84.48	234.23	0.21	0.19	-0.30	335.84
	NORMAL	1,552.0	16.62	197.04	1,521.73	-249.20	-92.72	261.23	0.36	-0.13	-1.18	248.99
	NORMAL	1,647.0	16.50	197.13	1,612.79	-275.08	-100.68	288.08	0.13	-0.13	0.09	167.98
	NORMAL	1,742.0	16.57	196.70	1,703.86	-300.95	-108.55	314.91	0.15	0.07	-0.45	299.56
	NORMAL	1,837.0	16.63	197.26	1,794.90	-326.91	-116.47	341.83	0.18	0.06	0.59	69.71
	NORMAL	1,932.0	15.34	199.12	1,886.23	-351.76	-124.62	367.70	1.46	-1.36	1.96	159.24
	NORMAL	2,026.0	15.42	200.53	1,976.86	-375.21	-133.08	392.24	0.41	0.09	1.50	78.61

## 2.1.2 Survey Stations (Continued)

Date	Type	MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	EW (ft)	V. sec. (ft)	DLS (°/100usft)	Bulld Rate (°/100usft)	Turn (°/100usft)	Tface (°)
9/30/2013	NORMAL	2,121.0	15.15	200.64	2,068.50	-398.66	-141.88	416.83	0.29	-0.28	0.12	173.92
	NORMAL	2,216.0	14.39	199.30	2,160.36	-421.42	-150.16	440.65	0.88	-0.80	-1.41	203.56
	NORMAL	2,310.0	15.18	197.55	2,251.25	-444.18	-157.73	464.36	0.97	0.84	-1.86	329.67
	NORMAL	2,405.0	14.65	195.34	2,343.05	-467.62	-164.66	488.63	0.82	-0.56	-2.33	225.96
	NORMAL	2,500.0	15.56	196.13	2,434.77	-491.45	-171.38	513.25	0.98	0.96	0.83	13.13
10/1/2013	NORMAL	2,594.0	16.09	199.68	2,525.21	-515.82	-179.27	538.61	1.17	0.56	3.78	63.02
	NORMAL	2,689.0	15.96	198.11	2,616.52	-540.63	-187.76	564.49	0.48	-0.14	-1.65	252.55
	NORMAL	2,784.0	15.21	196.42	2,708.02	-565.00	-195.34	589.79	0.92	-0.79	-1.78	210.38
	NORMAL	2,879.0	14.25	194.66	2,799.90	-588.27	-201.83	613.81	1.11	-1.01	-1.85	204.14
	NORMAL	2,973.0	14.54	199.10	2,890.95	-610.61	-208.61	636.98	1.21	0.31	4.72	77.44
	NORMAL	3,068.0	14.31	200.76	2,982.96	-632.86	-216.68	660.26	0.50	-0.24	1.75	119.88
	NORMAL	3,163.0	13.28	199.05	3,075.22	-654.15	-224.40	682.55	1.17	-1.08	-1.80	200.77
	NORMAL	3,257.0	13.92	196.97	3,166.58	-675.17	-231.23	704.42	0.86	0.68	-2.21	321.60
	NORMAL	3,338.0	14.22	196.90	3,245.15	-694.01	-236.96	723.95	0.37	0.37	-0.09	356.72
11/2/2013	NORMAL	3,453.0	12.49	196.77	3,357.04	-719.43	-244.66	750.31	1.50	-1.50	-0.11	180.93
	NORMAL	3,548.0	12.75	207.32	3,449.76	-738.58	-252.43	770.49	2.44	0.27	11.11	88.73
	NORMAL	3,643.0	15.56	210.65	3,541.86	-758.86	-263.74	792.38	3.08	2.86	3.51	17.78
	NORMAL	3,738.0	15.65	203.10	3,633.37	-781.61	-275.27	816.75	2.14	0.09	-7.95	268.90
	NORMAL	3,833.0	14.07	199.85	3,725.19	-804.26	-284.22	840.58	1.88	-1.66	-3.42	206.25
	NORMAL	3,927.0	13.37	195.98	3,816.51	-825.46	-291.09	862.63	1.23	-0.74	-4.12	230.80
	NORMAL	4,022.0	12.31	193.61	3,909.14	-845.86	-296.49	883.65	1.25	-1.12	-2.49	205.27
	NORMAL	4,116.0	11.96	187.98	4,001.04	-865.25	-300.20	903.38	1.31	-0.37	-5.99	250.79
	NORMAL	4,211.0	13.54	184.56	4,093.70	-886.08	-302.46	924.30	1.84	1.66	-3.60	332.79
	NORMAL	4,306.0	16.44	183.33	4,185.45	-910.59	-304.12	946.74	3.07	3.05	-1.29	353.14
	NORMAL	4,401.0	18.82	175.24	4,276.00	-939.29	-303.63	976.95	3.59	2.51	-8.52	310.26
	NORMAL	4,495.0	16.97	166.89	4,365.46	-967.77	-299.26	1,004.29	3.36	-1.97	-8.88	230.28
	NORMAL	4,590.0	14.95	162.14	4,456.80	-992.94	-292.36	1,027.94	2.53	-2.13	-5.00	210.62
	NORMAL	4,685.0	13.19	159.42	4,548.95	-1,014.75	-284.79	1,048.17	1.98	-1.85	-2.86	199.28
	NORMAL	4,780.0	14.07	158.63	4,641.27	-1,035.65	-276.77	1,067.43	0.95	0.93	-0.83	347.67
	NORMAL	4,875.0	13.10	151.69	4,733.62	-1,055.89	-267.45	1,085.81	1.99	-1.02	-7.31	235.90
	NORMAL	4,969.0	13.10	151.42	4,825.17	-1,074.62	-267.31	1,102.57	0.07	0.00	-0.29	269.87
	NORMAL	5,064.0	11.34	142.46	4,918.03	-1,091.48	-246.46	1,117.38	2.72	-1.85	-9.43	222.82
11/3/2013	NORMAL	5,159.0	10.20	145.80	5,011.35	-1,105.85	-236.04	1,129.78	1.37	-1.20	3.52	152.93
	NORMAL	5,253.0	9.23	136.31	5,104.01	-1,118.18	-226.16	1,140.28	1.99	-1.03	-10.10	234.18
	NORMAL	5,348.0	8.35	137.27	5,197.89	-1,128.76	-216.21	1,149.04	0.94	-0.93	1.01	171.01
	NORMAL	5,443.0	7.21	138.24	5,292.02	-1,138.27	-207.56	1,156.97	1.21	-1.20	1.02	173.91
	NORMAL	5,537.0	6.68	141.05	5,385.33	-1,146.93	-200.20	1,164.26	0.67	-0.56	2.99	148.73
	NORMAL	5,632.0	5.28	128.75	5,479.81	-1,153.96	-193.31	1,170.04	1.99	-1.47	-12.95	216.46
	NORMAL	5,727.0	4.57	133.05	5,574.46	-1,159.28	-187.14	1,174.24	0.84	-0.75	4.53	154.66
	NORMAL	5,822.0	3.43	132.88	5,669.23	-1,163.80	-182.29	1,177.88	1.20	-1.20	-0.18	180.51
	NORMAL	5,916.0	1.23	116.71	5,763.15	-1,166.16	-179.33	1,179.72	2.42	-2.34	-17.20	188.66
	NORMAL	6,011.0	0.53	129.36	5,858.13	-1,166.90	-178.08	1,180.23	0.76	-0.74	13.32	170.75
	NORMAL	6,106.0	0.44	164.08	5,953.13	-1,167.53	-177.64	1,180.78	0.32	-0.09	36.55	123.89
	NORMAL	6,201.0	0.26	173.22	6,048.13	-1,168.10	-177.51	1,181.32	0.20	-0.19	9.62	167.30
	NORMAL	6,295.0	0.44	206.18	6,142.13	-1,168.63	-177.65	1,181.87	0.28	0.19	35.06	65.48
	NORMAL	6,390.0	0.79	230.00	6,237.12	-1,169.38	-178.31	1,182.72	0.45	0.37	25.07	48.46
	NORMAL	6,485.0	1.06	239.14	6,332.11	-1,170.25	-179.57	1,183.79	0.32	0.28	9.62	33.28
	NORMAL	6,580.0	0.79	145.62	6,427.10	-1,171.24	-179.95	1,184.83	1.43	-0.28	-98.44	215.43
	NORMAL	6,674.0	1.06	168.65	6,521.09	-1,172.63	-179.41	1,186.11	0.48	0.29	24.50	65.90
	NORMAL	6,769.0	1.32	108.80	6,616.07	-1,173.84	-178.20	1,187.10	1.27	0.27	-63.00	250.83
	NORMAL	6,864.0	1.23	133.40	6,711.05	-1,174.90	-176.43	1,187.84	0.58	-0.09	25.89	111.49
	NORMAL	6,959.0	0.79	170.85	6,806.04	-1,176.24	-175.58	1,189.03	0.81	-0.46	39.42	141.45
	NORMAL	7,053.0	0.88	91.04	6,900.03	-1,176.90	-174.76	1,189.53	1.14	0.10	-84.90	233.79
	NORMAL	7,148.0	0.41	172.15	6,995.03	-1,177.25	-173.98	1,189.75	0.96	-0.49	85.38	153.62
	NORMAL	7,243.0	0.79	219.63	7,090.02	-1,178.09	-174.35	1,190.64	0.63	0.40	49.98	77.98
	NORMAL	7,338.0	0.62	23.45	7,185.02	-1,178.12	-174.57	1,190.70	1.47	-0.18	172.44	172.89

## 2.1.2 Survey Stations (Continued)

Date	Type	MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	EW (ft)	V. sec. (ft)	DLS (°/100usft)	Build Rate (°/100usft)	Turn (°/100usft)	Tface (°)
11/3/2013	NORMAL	7,433.0	0.18	46.22	7,280.02	-1,177.55	-174.25	1,190.09	0.48	-0.46	23.97	171.28
	NORMAL	7,528.0	0.35	238.96	7,375.02	-1,177.59	-174.39	1,190.16	0.55	0.18	-176.06	188.42
	NORMAL	7,622.0	0.44	226.48	7,469.01	-1,177.99	-174.90	1,190.63	0.13	0.10	-13.28	309.94
	NORMAL	7,717.0	0.70	221.56	7,564.01	-1,178.68	-175.55	1,191.42	0.28	0.27	-5.18	346.87
11/4/2013	NORMAL	7,812.0	0.53	12.20	7,659.01	-1,178.68	-175.84	1,191.47	1.25	-0.18	158.57	167.39
	NORMAL	7,907.0	0.26	356.21	7,754.07	-1,178.04	-175.77	1,190.82	0.30	-0.28	-16.83	194.35
	NORMAL	8,001.0	0.53	250.21	7,848.00	-1,177.97	-176.19	1,190.83	0.69	0.29	-112.77	231.44
	NORMAL	8,096.0	0.26	237.64	7,943.00	-1,178.23	-176.78	1,191.19	0.30	-0.28	-13.23	191.58
	NORMAL	8,191.0	0.88	242.30	8,038.00	-1,178.69	-177.61	1,191.78	0.65	0.65	4.91	6.61
	NORMAL	8,286.0	0.44	185.96	8,132.99	-1,179.39	-178.30	1,192.58	0.77	-0.46	-59.31	209.93
	NORMAL	8,380.0	0.68	142.30	8,226.99	-1,180.19	-177.99	1,193.32	0.50	0.26	-46.45	276.32
	NORMAL	8,475.0	0.53	191.85	8,321.98	-1,181.07	-177.74	1,194.14	0.55	-0.16	52.16	129.81
	NORMAL	8,569.0	1.23	214.62	8,415.97	-1,182.32	-178.40	1,195.49	0.82	0.74	24.22	38.24
	NORMAL	8,664.0	0.79	145.27	8,510.96	-1,183.70	-178.61	1,196.88	1.27	-0.46	-73.00	217.85
	NORMAL	8,759.0	0.79	187.72	8,605.95	-1,184.89	-178.32	1,198.00	0.60	0.00	44.68	111.22
	NORMAL	8,853.0	1.32	203.81	8,699.94	-1,186.52	-178.85	1,199.70	0.64	0.56	17.12	37.41
11/5/2013	NORMAL	8,948.0	0.70	7.55	8,794.93	-1,186.95	-179.21	1,200.18	2.11	-0.65	172.36	174.38
	NORMAL	9,043.0	2.87	7.10	8,889.88	-1,184.01	-178.84	1,197.23	2.28	2.28	-0.47	359.40
	NORMAL	9,137.0	2.55	355.15	8,983.77	-1,179.59	-178.73	1,192.85	0.69	-0.34	-12.71	234.60
	NORMAL	9,232.0	2.46	338.72	9,078.68	-1,175.59	-179.65	1,189.06	0.76	-0.09	-17.29	254.70
	NORMAL	9,326.0	2.55	315.51	9,172.60	-1,172.21	-181.84	1,186.10	1.08	0.10	-24.69	263.41
	NORMAL	9,421.0	1.93	331.00	9,267.52	-1,169.31	-184.10	1,183.62	0.91	-0.65	16.31	143.24
	NORMAL	9,516.0	1.08	358.05	9,362.49	-1,167.01	-184.91	1,181.49	1.14	-0.89	28.47	153.10
	NORMAL	9,611.0	1.06	286.60	9,457.48	-1,165.87	-185.78	1,180.51	1.32	-0.02	-75.21	233.54
	NORMAL	9,705.0	1.32	268.67	9,551.46	-1,165.64	-187.69	1,180.61	0.48	0.28	-19.07	295.74
	NORMAL	9,800.0	1.06	271.57	9,646.44	-1,165.65	-189.67	1,180.94	0.28	-0.27	3.05	168.40
	NORMAL	9,895.0	1.06	256.80	9,741.42	-1,165.82	-191.40	1,181.41	0.29	0.00	-15.55	262.62
	NORMAL	9,990.0	0.88	217.43	9,836.41	-1,166.60	-192.70	1,182.39	0.71	-0.19	-41.44	235.78
11/6/2013	NORMAL	10,084.0	1.23	210.48	9,930.40	-1,168.04	-193.65	1,183.98	0.40	0.37	-7.39	336.42
	NORMAL	10,179.0	1.85	207.76	10,025.36	-1,170.28	-194.88	1,186.39	0.66	0.65	-2.86	351.91
	NORMAL	10,273.0	1.93	213.91	10,119.31	-1,172.94	-196.47	1,189.27	0.23	0.09	6.54	71.57
	NORMAL	10,368.0	2.46	217.87	10,214.24	-1,175.87	-198.61	1,192.53	0.58	0.56	4.17	17.95
	NORMAL	10,462.0	3.34	223.58	10,308.12	-1,179.45	-201.74	1,196.58	0.98	0.94	6.07	21.04
	NORMAL	10,557.0	3.52	227.62	10,402.95	-1,183.42	-205.80	1,201.18	0.32	0.19	4.25	55.35
	NORMAL	10,652.0	3.52	228.06	10,497.77	-1,187.34	-210.13	1,205.76	0.03	0.00	0.46	90.22
	NORMAL	10,747.0	3.69	227.71	10,592.58	-1,191.34	-214.56	1,210.45	0.18	0.18	-0.37	352.45
	NORMAL	10,841.0	3.96	227.80	10,686.37	-1,195.56	-219.20	1,215.39	0.29	0.29	0.10	1.32
	NORMAL	10,936.0	3.78	227.18	10,781.16	-1,199.89	-223.93	1,220.45	0.19	-0.19	-0.65	192.78
	NORMAL	10,971.0	4.13	226.48	10,816.07	-1,201.54	-225.69	1,222.38	1.01	1.00	-2.00	351.80
	NORMAL	11,020.0	4.13	226.48	10,864.95	-1,203.97	-228.25	1,225.20	0.00	0.00	0.00	0.00