

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 411-23-298	Wellbore No.	00
Wellbore Legal Name	RG 411-23-298	Common Wellbore Name	RG 411-23-298
Project	RG 14-02S-098W	Site	RG 24-14-298 Pad
Vertical Section Azimuth	231.59 (°)	North reference	
Origin N/S		Origin E/W	
Spud date	10/9/2013	UWI	RG 411-23-298
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	10/9/2013	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 (°/100usft)	Build Rate (°/100usft)	Turn (°/100usft)	Tface (°)
10/9/2013	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/9/2013	NORMAL	165.0	2.02	252.95	164.97	-0.85	-2.78	2.71	1.22	1.22	0.00	252.95
	NORMAL	257.0	3.08	230.62	256.88	-2.90	-6.24	6.69	1.56	1.15	-24.27	305.33
	NORMAL	350.0	4.93	227.29	349.65	-7.19	-11.11	13.17	2.00	1.99	-3.58	351.17
	NORMAL	442.0	7.21	228.60	441.12	-13.69	-18.35	22.88	2.48	2.48	1.42	4.13
	NORMAL	534.0	10.21	230.71	532.05	-22.68	-28.99	36.80	3.28	3.26	2.29	7.12
10/10/2013	NORMAL	607.0	12.22	230.88	603.66	-31.65	-39.99	51.00	2.75	2.75	0.23	1.03
	NORMAL	699.0	15.04	230.08	693.06	-45.45	-56.70	72.67	3.07	3.07	-0.87	355.79
	NORMAL	792.0	17.85	231.05	782.24	-62.16	-77.05	98.99	3.04	3.02	1.04	6.05
	NORMAL	884.0	20.22	234.83	869.21	-80.19	-101.01	128.97	2.90	2.58	4.11	29.28
	NORMAL	976.0	23.21	234.65	954.67	-99.84	-128.80	162.96	3.25	3.25	-0.20	358.64
	NORMAL	1,071.0	23.04	232.11	1,042.04	-122.09	-158.74	200.24	1.07	-0.18	-2.67	259.16
	NORMAL	1,166.0	23.39	230.44	1,129.35	-145.51	-187.95	237.68	0.78	0.37	-1.76	297.23
	NORMAL	1,261.0	23.13	228.94	1,216.63	-169.78	-216.56	275.17	0.68	-0.27	-1.58	245.61
	NORMAL	1,355.0	23.65	228.15	1,302.90	-194.49	-244.53	312.44	0.65	0.55	-0.84	328.54
	NORMAL	1,450.0	25.24	229.91	1,389.39	-220.24	-274.22	351.71	1.84	1.67	1.85	25.41
	NORMAL	1,545.0	24.97	233.16	1,475.42	-245.31	-305.76	392.00	1.48	-0.28	3.42	102.55
	NORMAL	1,640.0	25.24	233.34	1,561.44	-269.43	-338.06	432.29	0.30	0.28	0.19	15.88
	NORMAL	1,734.0	23.92	233.60	1,646.92	-292.70	-369.48	471.37	1.41	-1.40	0.28	175.43
	NORMAL	1,829.0	24.27	234.04	1,733.65	-315.60	-400.78	510.12	0.41	0.37	0.46	27.37
	NORMAL	1,924.0	23.48	236.24	1,820.52	-337.58	-432.32	548.49	1.25	-0.83	2.32	132.58

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 (°)
10/10/2013	NORMAL	2,019.0	22.51	232.19	1,907.97	-359.25	-462.42	585.54	1.95	-1.02	-4.26	236.63
	NORMAL	2,113.0	23.30	230.88	1,994.56	-382.01	-491.06	622.13	1.00	0.84	-1.39	326.56
	NORMAL	2,208.0	23.65	230.88	2,081.70	-405.89	-520.42	659.97	0.37	0.37	0.00	0.00
	NORMAL	2,303.0	23.65	230.17	2,168.72	-430.11	-549.84	698.07	0.30	0.00	-0.75	269.67
	NORMAL	2,398.0	22.34	230.88	2,256.17	-453.71	-578.48	735.17	1.41	-1.38	0.75	168.37
	NORMAL	2,492.0	21.72	229.65	2,343.31	-476.24	-605.60	770.42	0.82	-0.66	-1.31	216.09
10/11/2013	NORMAL	2,587.0	21.19	227.71	2,431.72	-499.18	-631.69	805.12	0.93	-0.56	-2.04	232.34
	NORMAL	2,681.0	22.34	228.77	2,519.02	-522.39	-657.70	839.91	1.29	1.22	1.13	19.36
	NORMAL	2,776.0	22.77	228.68	2,606.76	-546.42	-685.08	876.31	0.45	0.45	-0.09	355.37
	NORMAL	2,871.0	22.51	226.92	2,694.44	-570.98	-712.17	912.79	0.76	-0.27	-1.85	248.19
	NORMAL	2,966.0	22.95	229.38	2,782.06	-595.46	-739.52	949.43	1.10	0.46	2.59	66.30
	NORMAL	3,060.0	22.69	228.24	2,868.70	-619.47	-766.95	985.84	0.55	-0.28	-1.21	239.02
	NORMAL	3,155.0	22.95	229.29	2,956.27	-643.75	-794.66	1,022.64	0.51	0.27	1.11	57.93
	NORMAL	3,250.0	23.13	231.84	3,043.69	-667.36	-823.37	1,059.80	1.07	0.19	2.68	80.95
	NORMAL	3,344.0	22.69	230.35	3,130.28	-690.34	-851.85	1,096.39	0.77	-0.47	-1.59	232.13
	NORMAL	3,439.0	22.77	230.52	3,217.90	-713.72	-880.14	1,133.09	0.11	0.08	0.18	39.47
	NORMAL	3,534.0			3,310.42	-725.57	-894.52	1,151.72	23.97	-23.97	0.00	180.00
	NORMAL	3,629.0			3,405.42	-725.57	-894.52	1,151.72	0.00	0.00	0.00	0.00
10/13/2013	NORMAL	3,643.0	19.52	225.95	3,408.15	-762.53	-935.13	1,154.07	1.79	-1.59	-2.24	204.78
	NORMAL	3,738.0	19.70	235.53	3,497.67	-782.64	-959.74	1,238.28	3.39	0.19	10.08	91.32
	NORMAL	3,833.0	19.26	235.09	3,587.23	-800.67	-985.79	1,269.89	0.49	-0.46	-0.46	198.24
	NORMAL	3,927.0	18.73	237.29	3,676.11	-817.69	-1,011.21	1,300.39	0.95	-0.56	2.34	127.54
	NORMAL	4,022.0	19.17	237.38	3,765.96	-834.34	-1,037.18	1,331.08	0.46	0.46	0.09	3.84
	NORMAL	4,116.0	18.99	236.85	3,854.80	-851.03	-1,062.98	1,361.67	0.27	-0.19	-0.56	223.66
	NORMAL	4,211.0	20.14	235.27	3,944.31	-868.80	-1,089.36	1,393.38	1.33	1.21	-1.66	334.55
	NORMAL	4,306.0	19.96	234.30	4,033.56	-887.58	-1,115.97	1,425.90	0.40	-0.19	-1.02	241.12
	NORMAL	4,401.0	21.81	234.83	4,122.31	-907.21	-1,143.57	1,459.72	1.96	1.95	0.56	6.08
	NORMAL	4,495.0	20.93	233.78	4,209.85	-927.19	-1,171.39	1,493.93	1.02	-0.94	-1.12	203.01
	NORMAL	4,590.0	19.70	232.72	4,298.94	-946.91	-1,197.82	1,526.90	1.35	-1.29	-1.12	196.16
	NORMAL	4,685.0	18.73	232.11	4,388.64	-965.98	-1,222.60	1,558.16	1.04	-1.02	-0.64	191.41
	NORMAL	4,780.0	17.67	231.84	4,478.89	-984.25	-1,245.97	1,587.83	1.12	-1.12	-0.28	184.42
	NORMAL	4,875.0	16.53	231.05	4,569.69	-1,001.66	-1,267.82	1,615.76	1.22	-1.20	-0.83	191.14
	NORMAL	4,969.0	15.48	230.79	4,660.04	-1,018.00	-1,287.94	1,641.68	1.12	-1.12	-0.28	183.78
	NORMAL	5,064.0	14.25	230.79	4,751.86	-1,033.40	-1,306.83	1,666.05	1.29	-1.29	0.00	180.00
	NORMAL	5,159.0	13.04	228.42	4,844.18	-1,047.91	-1,323.90	1,688.44	1.40	-1.27	-2.49	203.65
	NORMAL	5,253.0	11.96	226.48	4,935.95	-1,061.65	-1,338.90	1,708.73	1.23	-1.15	-2.06	200.30
	NORMAL	5,348.0	11.96	227.71	5,028.89	-1,075.05	-1,353.32	1,728.35	0.27	0.00	1.29	90.60
	NORMAL	5,443.0	10.90	226.31	5,122.01	-1,087.88	-1,367.09	1,747.12	1.15	-1.12	-1.47	193.98
	NORMAL	5,537.0	10.73	225.78	5,214.34	-1,100.12	-1,379.79	1,764.68	0.21	-0.18	-0.56	210.07
	NORMAL	5,632.0	9.94	227.45	5,307.79	-1,111.84	-1,392.17	1,781.65	0.89	-0.83	1.76	160.05
	NORMAL	5,727.0	9.25	229.64	5,401.47	-1,122.33	-1,404.03	1,797.46	0.82	-0.73	2.31	153.20
	NORMAL	5,822.0	8.27	236.50	5,495.36	-1,131.04	-1,415.55	1,811.90	1.51	-1.03	7.22	136.52
10/14/2013	NORMAL	5,916.0	6.16	253.29	5,588.62	-1,136.23	-1,426.02	1,823.32	3.15	-2.24	17.86	143.14
	NORMAL	6,011.0	4.48	253.11	5,683.21	-1,138.77	-1,434.45	1,831.51	1.77	-1.77	-0.19	180.48
	NORMAL	6,106.0	1.89	241.30	5,778.05	-1,140.60	-1,439.37	1,836.51	2.80	-2.73	-12.43	188.37
	NORMAL	6,201.0	0.53	347.68	5,873.04	-1,140.92	-1,440.84	1,837.86	2.21	-1.43	111.98	166.00
	NORMAL	6,295.0	0.70	352.08	5,967.03	-1,139.93	-1,441.01	1,837.38	0.19	0.18	4.68	17.73
	NORMAL	6,390.0	0.44	324.22	6,062.03	-1,139.06	-1,441.31	1,837.07	0.39	-0.27	-29.33	213.47
	NORMAL	6,485.0	0.53	299.25	6,157.02	-1,138.55	-1,441.80	1,837.22	0.24	0.09	-26.28	280.25
	NORMAL	6,580.0	0.53	277.72	6,252.02	-1,138.27	-1,442.72	1,837.69	0.21	0.00	-22.66	259.24
	NORMAL	6,674.0	1.14	261.02	6,346.01	-1,138.36	-1,444.08	1,838.80	0.69	0.65	-17.77	329.76
	NORMAL	6,769.0	1.06	100.62	6,441.00	-1,138.67	-1,444.15	1,839.05	2.28	-0.08	-168.84	189.44
	NORMAL	6,864.0	0.97	108.09	6,535.99	-1,139.08	-1,442.52	1,838.03	0.17	-0.09	7.86	127.92
	NORMAL	6,959.0	0.35	149.66	6,630.98	-1,139.58	-1,441.61	1,837.63	0.78	-0.65	43.76	161.84
	NORMAL	7,053.0	0.79	197.48	6,724.98	-1,140.45	-1,441.66	1,838.20	0.65	0.47	50.87	72.87
	NORMAL	7,148.0	0.62	38.04	6,819.98	-1,140.67	-1,441.54	1,838.25	1.46	-0.18	-167.83	189.03

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 (°)
10/14/2013	NORMAL	7,243.0	0.62	277.72	6,914.97	-1,140.19	-1,441.73	1,838.10	1.13	0.00	-126.65	209.84
	NORMAL	7,338.0	0.44	8.60	7,009.97	-1,139.77	-1,442.18	1,838.19	0.81	-0.19	95.66	144.93
	NORMAL	7,433.0	0.05	50.13	7,104.97	-1,139.38	-1,442.10	1,837.88	0.43	-0.41	43.72	175.29
	NORMAL	7,528.0	0.62	203.10	7,199.97	-1,139.82	-1,442.27	1,838.29	0.70	0.60	161.02	154.93
	NORMAL	7,622.0	0.53	135.43	7,293.97	-1,140.60	-1,442.16	1,838.70	0.69	-0.10	-71.99	229.51
10/15/2013	NORMAL	7,717.0	0.88	110.38	7,388.96	-1,141.17	-1,441.17	1,838.27	0.48	0.37	-26.37	305.65
	NORMAL	7,812.0	0.88	156.96	7,483.95	-1,142.09	-1,440.20	1,838.09	0.73	0.00	49.03	113.29
	NORMAL	7,907.0	0.97	155.29	7,578.94	-1,143.50	-1,439.58	1,838.47	0.10	0.09	-1.76	342.49
	NORMAL	8,001.0	1.32	191.94	7,672.92	-1,145.28	-1,439.47	1,839.49	0.84	0.37	38.99	83.55
	NORMAL	8,096.0	0.62	177.44	7,767.90	-1,146.86	-1,439.67	1,840.63	0.78	-0.74	-15.26	192.17
	NORMAL	8,191.0	0.79	193.96	7,862.90	-1,148.01	-1,439.81	1,841.45	0.28	0.18	17.39	58.55
	NORMAL	8,286.0	0.62	301.89	7,957.89	-1,148.38	-1,440.40	1,842.15	1.20	-0.18	113.61	148.98
	NORMAL	8,380.0	1.23	250.12	8,051.88	-1,148.45	-1,441.78	1,843.27	1.04	0.65	-55.07	278.31
	NORMAL	8,475.0	0.96	211.50	8,146.87	-1,149.48	-1,443.16	1,844.99	0.81	-0.28	-40.65	231.31
	NORMAL	8,570.0	0.62	204.77	8,241.86	-1,150.62	-1,443.79	1,846.19	0.37	-0.36	-7.08	191.92
	NORMAL	8,664.0	0.53	182.45	8,335.85	-1,151.52	-1,444.02	1,846.93	0.25	-0.10	-23.74	237.20
	NORMAL	8,759.0	1.41	202.49	8,430.84	-1,153.04	-1,444.49	1,848.24	0.98	0.93	21.09	31.30
	NORMAL	8,853.0	0.09	275.44	8,524.83	-1,154.10	-1,445.00	1,849.31	1.47	-1.40	77.61	176.44
	NORMAL	8,948.0	0.97	237.56	8,619.82	-1,154.52	-1,445.76	1,850.16	0.95	0.93	-39.87	318.60
	NORMAL	9,043.0	0.53	358.23	8,714.82	-1,154.51	-1,446.45	1,850.70	1.39	-0.46	127.02	159.82
10/16/2013	NORMAL	9,137.0	2.37	10.62	8,808.79	-1,152.17	-1,446.10	1,848.97	1.97	1.96	13.18	15.90
	NORMAL	9,232.0	2.20	359.28	8,903.71	-1,148.41	-1,445.76	1,846.37	0.51	-0.18	-11.94	243.79
	NORMAL	9,326.0	1.85	338.63	8,997.65	-1,145.20	-1,446.34	1,844.82	0.85	-0.37	-21.97	234.30
	NORMAL	9,421.0	2.02	300.13	9,092.60	-1,142.93	-1,448.35	1,844.99	1.35	0.18	-40.53	257.93
	NORMAL	9,516.0	1.49	341.88	9,187.56	-1,140.91	-1,450.18	1,845.17	1.42	-0.56	43.95	132.47
	NORMAL	9,611.0	1.32	349.62	9,282.53	-1,138.66	-1,450.76	1,844.23	0.27	-0.18	8.15	135.68
	NORMAL	9,705.0	1.76	16.69	9,376.50	-1,136.22	-1,450.54	1,842.54	0.89	0.47	28.80	72.84
	NORMAL	9,800.0	1.06	358.67	9,471.47	-1,133.94	-1,450.14	1,840.81	0.86	-0.74	-18.97	203.56
	NORMAL	9,895.0	0.79	282.91	9,566.46	-1,132.92	-1,450.80	1,840.69	1.22	-0.28	-79.75	221.50
	NORMAL	9,990.0	0.79	279.48	9,661.46	-1,132.66	-1,452.09	1,841.54	0.05	0.00	-3.61	268.29
	NORMAL	10,084.0	1.14	263.40	9,755.44	-1,132.66	-1,453.65	1,842.77	0.47	0.37	-17.11	314.05
10/17/2013	NORMAL	10,179.0	1.49	252.32	9,850.42	-1,133.15	-1,455.77	1,844.73	0.45	0.37	-11.66	318.38
	NORMAL	10,273.0	2.02	239.05	9,944.37	-1,134.37	-1,458.35	1,847.51	0.71	0.56	-14.12	315.76
	NORMAL	10,368.0	2.20	241.25	10,039.31	-1,136.11	-1,461.39	1,850.97	0.21	0.19	2.32	25.33
	NORMAL	10,462.0	2.81	238.26	10,133.22	-1,138.19	-1,464.93	1,855.04	0.66	0.65	-3.18	346.41
	NORMAL	10,557.0	3.43	236.85	10,228.08	-1,140.97	-1,469.29	1,860.18	0.66	0.65	-1.48	352.24
	NORMAL	10,652.0	3.43	233.95	10,322.91	-1,144.19	-1,473.97	1,865.85	0.18	0.00	-3.05	268.55
	NORMAL	10,747.0	3.52	235.36	10,417.73	-1,147.52	-1,478.66	1,871.60	0.13	0.09	1.48	44.22
	NORMAL	10,841.0	3.78	233.78	10,511.54	-1,150.99	-1,483.54	1,877.57	0.30	0.28	-1.68	338.06
	NORMAL	10,936.0	4.13	232.11	10,606.32	-1,154.95	-1,488.76	1,884.12	0.39	0.37	-1.76	340.95
	NORMAL	11,014.0	4.22	232.28	10,684.11	-1,158.43	-1,493.25	1,889.80	0.12	0.12	0.22	7.91
10/18/2013	NORMAL	11,061.0	4.22	232.28	10,730.98	-1,160.54	-1,495.99	1,893.26	0.00	0.00	0.00	0.00