

Deviation Summary

PICEANCE HL

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 22-27-198	Wellbore No.	OH
Wellbore Legal Name	RGU 22-27-198	Common Wellbore Name	RGU 22-27-198
Project	RG 27-01S-098W	Site	RGU 22-27-198 Pad
Vertical Section Azimuth	340.56 (°)	North reference	
Origin N/S		Origin E/W	
Spud date	8/3/2013	UWI	RGU 22-27-198
Active datum	KB @6,581.0ft (above Mean Sea Level)		

2 Survey Name

2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	SDI
Date Started	8/3/2013	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 (°)
8/3/2013	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/3/2013	NORMAL	210.0	2.00	11.26	209.96	3.59	0.72	3.15	0.95	0.95	0.00	11.26
	NORMAL	303.0	3.30	351.30	302.86	7.83	0.63	7.18	1.69	1.40	-21.46	314.38
	NORMAL	395.0	5.90	334.77	394.56	14.73	-1.79	14.48	3.14	2.83	-17.97	324.58
	NORMAL	487.0	6.43	334.26	486.03	23.65	-6.04	24.31	0.58	0.58	-0.55	353.85
	NORMAL	579.0	5.24	334.37	577.55	32.07	-10.10	33.61	1.29	-1.29	0.12	179.52
	NORMAL	671.0	5.44	335.70	669.15	39.84	-13.71	42.13	0.26	0.22	1.45	32.42
	NORMAL	763.0	5.56	332.92	760.73	47.78	-17.53	50.89	0.32	0.13	-3.02	292.86
	NORMAL	855.0	4.82	341.67	852.35	55.42	-20.78	59.17	1.18	-0.80	9.51	137.37
	NORMAL	947.0	5.02	339.40	944.01	62.85	-23.41	67.06	0.30	0.22	-2.47	314.64
	NORMAL	1,041.0	4.94	337.14	1,037.66	70.43	-26.43	75.21	0.23	-0.09	-2.40	246.69
	NORMAL	1,167.0	4.25	335.94	1,163.25	79.70	-30.44	85.28	0.55	-0.55	-0.95	187.33
8/4/2013	NORMAL	1,263.0	4.16	350.41	1,258.99	86.38	-32.47	92.26	1.11	-0.09	15.07	102.04
	NORMAL	1,357.0	4.64	349.94	1,352.72	93.48	-33.70	99.37	0.51	0.51	-0.50	355.47
	NORMAL	1,452.0	5.57	338.27	1,447.34	101.55	-36.08	107.77	1.46	0.98	-12.28	305.94
	NORMAL	1,547.0	5.75	331.23	1,541.88	110.00	-40.08	117.07	0.75	0.19	-7.41	281.01
	NORMAL	1,641.0	5.23	343.12	1,635.45	118.23	-43.59	126.00	1.33	-0.55	12.65	120.41
	NORMAL	1,736.0	5.14	345.12	1,730.06	126.49	-45.94	134.57	0.21	-0.09	2.11	117.46
	NORMAL	1,831.0	5.31	345.42	1,824.67	134.85	-48.14	143.19	0.18	0.18	0.32	9.28
	NORMAL	1,926.0	4.97	346.76	1,919.29	143.11	-50.19	151.66	0.38	-0.36	1.41	161.22
	NORMAL	2,115.0	6.42	351.94	2,107.23	162.73	-53.50	171.26	0.11	0.03	0.96	73.99

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 (°)
8/4/2013	NORMAL	2,210.0	6.53	353.72	2,201.63	173.35	-54.84	181.72	0.24	0.12	1.87	62.16
	NORMAL	2,304.0	7.59	343.33	2,294.92	184.62	-57.20	193.13	1.76	1.13	-11.05	304.46
	NORMAL	2,399.0	7.58	341.68	2,389.08	196.57	-60.97	205.66	0.23	-0.01	-1.74	266.55
	NORMAL	2,494.0	7.41	340.26	2,483.27	208.29	-65.01	218.05	0.26	-0.18	-1.49	226.75
	NORMAL	2,588.0	7.28	340.61	2,576.50	219.61	-69.04	230.07	0.15	-0.14	0.37	161.18
	NORMAL	2,683.0	7.21	340.31	2,670.74	230.90	-73.04	242.05	0.08	-0.07	-0.32	208.24
	NORMAL	2,778.0	7.27	340.31	2,764.99	242.17	-77.08	254.02	0.06	0.06	0.00	0.00
	NORMAL	2,873.0	6.93	339.70	2,859.26	253.21	-81.09	265.76	0.37	-0.36	-0.64	192.20
	NORMAL	2,968.0	6.36	335.46	2,953.62	263.37	-85.26	276.73	0.79	-0.60	-4.46	218.63
	NORMAL	3,063.0	5.56	328.51	3,048.11	272.08	-89.85	286.48	1.13	-0.84	-7.32	218.63
	NORMAL	3,157.0	5.37	331.54	3,141.68	279.83	-94.33	295.27	0.37	-0.20	3.22	124.86
8/4/2013	NORMAL	2,020.0	6.39	351.03	2,012.82	152.25	-51.93	160.85	1.58	1.51	4.54	18.71
8/5/2013	NORMAL	3,252.0	5.59	346.82	3,236.24	288.33	-97.51	304.26	1.55	0.23	16.08	89.08
	NORMAL	3,346.0	5.20	343.98	3,329.83	296.88	-99.73	313.15	0.50	-0.41	-3.02	212.99
	NORMAL	3,441.0	5.42	345.68	3,424.42	305.37	-102.03	321.92	0.28	0.23	1.79	36.42
	NORMAL	3,536.0	5.47	347.09	3,518.99	314.13	-104.15	330.88	0.15	0.05	1.48	70.21
	NORMAL	3,631.0	4.91	338.15	3,613.60	322.32	-106.67	339.44	1.03	-0.59	-9.41	230.90
	NORMAL	3,699.0	5.28	338.85	3,681.34	327.94	-108.89	345.48	0.55	0.54	1.03	9.89
	NORMAL	3,762.0	5.28	338.85	3,744.08	333.26	-110.97	351.27	0.00	0.00	0.00	0.00
9/12/2013	NORMAL	3,833.0	3.96	326.19	3,814.90	337.53	-113.68	356.83	1.24	-0.99	-9.45	211.49
	NORMAL	3,928.0	4.84	318.28	3,909.62	343.25	-118.18	363.01	1.12	0.93	-8.33	321.42
	NORMAL	4,022.0	7.47	328.56	4,003.07	351.42	-124.00	372.66	3.02	2.80	10.94	27.91
	NORMAL	4,117.0	8.44	339.46	4,097.16	363.22	-129.67	385.67	1.88	1.02	11.47	62.74
	NORMAL	4,212.0	7.83	347.81	4,191.21	376.08	-133.49	399.06	1.40	-0.64	8.79	121.40
	NORMAL	4,306.0	7.03	344.21	4,284.42	387.87	-136.40	411.15	0.98	-0.85	-3.83	208.42
	NORMAL	4,401.0	7.39	349.30	4,378.67	399.47	-139.12	423.00	0.77	0.38	5.36	63.14
	NORMAL	4,496.0	5.80	344.38	4,473.04	410.09	-141.55	433.82	1.77	-1.67	-5.18	197.13
	NORMAL	4,590.0	6.60	350.97	4,566.49	420.00	-143.67	443.88	1.14	0.85	7.01	44.97
	NORMAL	4,685.0	6.68	349.30	4,660.86	430.83	-145.56	454.71	0.22	0.08	-1.76	291.67
	NORMAL	4,780.0	5.36	346.32	4,755.33	440.57	-147.63	464.58	1.43	-1.39	-3.14	191.84
	NORMAL	4,874.0	6.07	342.80	4,848.86	449.58	-150.14	473.92	0.84	0.76	-3.74	331.97
	NORMAL	4,969.0	6.16	344.21	4,943.32	459.28	-153.01	484.02	0.18	0.09	1.48	59.77
	NORMAL	5,064.0	6.86	356.16	5,037.71	469.85	-154.78	494.58	1.60	0.74	12.58	68.70
	NORMAL	5,158.0	7.47	353.00	5,130.98	481.52	-155.90	505.95	0.77	0.65	-3.36	325.56
	NORMAL	5,253.0	7.56	354.40	5,225.16	493.86	-157.26	518.05	0.21	0.09	1.47	64.52
	NORMAL	5,348.0	7.12	359.94	5,319.39	505.97	-157.88	529.67	0.88	-0.46	5.83	124.60
9/13/2013	NORMAL	5,443.0	8.44	353.87	5,413.51	518.79	-158.63	542.01	1.63	1.39	-6.39	325.07
	NORMAL	5,538.0	7.21	351.24	5,507.63	531.62	-160.28	554.65	1.35	-1.29	-2.77	194.93
	NORMAL	5,632.0	7.30	358.71	5,600.88	543.42	-161.31	566.13	1.01	0.10	7.95	88.26
	NORMAL	5,727.0	8.09	352.12	5,695.02	556.07	-162.37	578.41	1.25	0.83	-6.94	308.54
	NORMAL	5,822.0	7.12	350.80	5,789.19	568.51	-164.22	590.75	1.04	-1.02	-1.39	189.56
	NORMAL	5,917.0	6.07	347.46	5,883.56	579.22	-166.26	601.53	1.18	-1.11	-3.52	198.42
	NORMAL	6,012.0	6.33	348.34	5,978.00	589.25	-168.40	611.71	0.29	0.27	0.93	20.52
	NORMAL	6,107.0	5.89	350.89	6,072.46	599.20	-170.23	621.69	0.54	-0.46	2.68	149.59
	NORMAL	6,202.0	5.36	357.30	6,167.00	608.44	-171.22	630.74	0.86	-0.56	6.75	133.31
	NORMAL	6,296.0	4.57	350.27	6,260.65	616.52	-172.06	638.63	1.06	-0.84	-7.48	214.14
	NORMAL	6,391.0	4.04	356.77	6,355.38	623.59	-172.88	645.58	0.76	-0.56	6.84	140.58
	NORMAL	6,485.0	3.87	5.39	6,449.16	630.05	-172.77	651.64	0.66	-0.18	9.17	110.23
	NORMAL	6,580.0	3.25	0.47	6,543.98	635.94	-172.45	657.08	0.73	-0.65	-5.18	203.79
	NORMAL	6,674.0	3.61	15.58	6,637.81	641.45	-171.63	662.01	1.03	0.38	16.07	75.94
	NORMAL	6,769.0	3.08	12.77	6,732.65	646.82	-170.26	666.62	0.58	-0.56	-2.96	195.79
	NORMAL	6,864.0	2.55	5.74	6,827.53	651.42	-169.49	670.69	0.66	-0.56	-7.40	209.60
	NORMAL	6,958.0	1.85	350.36	6,921.47	654.99	-169.53	674.08	0.97	-0.74	-16.36	212.63
9/14/2013	NORMAL	7,053.0	1.76	319.51	7,016.42	657.61	-170.74	676.95	1.01	-0.09	-32.47	249.42
	NORMAL	7,148.0	1.49	326.98	7,111.38	659.76	-172.36	679.51	0.36	-0.28	7.86	145.58
	NORMAL	7,243.0	0.70	167.72	7,206.38	660.23	-172.91	680.13	2.27	-0.83	-167.64	186.59

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 (°)
9/14/2013	NORMAL	7,337.0	1.06	165.61	7,300.36	658.82	-172.57	678.70	0.38	0.38	-2.24	353.80
	NORMAL	7,432.0	1.23	188.38	7,395.35	656.96	-172.50	676.92	0.51	0.18	23.97	81.14
	NORMAL	7,527.0	0.53	194.44	7,490.33	655.53	-172.76	675.66	0.74	-0.74	6.38	175.45
	NORMAL	7,621.0	0.35	3.10	7,584.33	655.40	-172.85	675.56	0.93	-0.19	179.43	175.49
	NORMAL	7,716.0	0.35	337.70	7,679.33	655.95	-172.95	676.12	0.16	0.00	-26.74	257.30
	NORMAL	7,811.0	0.35	265.98	7,774.33	656.20	-173.34	676.48	0.43	0.00	-75.49	234.14
	NORMAL	7,905.0	0.62	248.32	7,868.33	655.99	-174.10	676.54	0.33	0.29	-18.79	322.01
	NORMAL	8,000.0	1.14	317.05	7,963.32	656.50	-175.23	677.39	1.14	0.55	72.35	100.99
	NORMAL	8,095.0	0.88	317.05	8,058.30	657.72	-176.37	678.92	0.27	-0.27	0.00	180.00
	NORMAL	8,189.0	0.79	27.98	8,152.30	658.82	-176.55	680.02	1.03	-0.10	75.46	129.79
9/15/2013	NORMAL	8,284.0	0.53	279.96	8,247.29	659.48	-176.68	680.68	1.14	-0.27	-113.71	207.85
	NORMAL	8,379.0	0.35	309.40	8,342.29	659.74	-177.34	681.15	0.30	-0.19	30.99	142.62
	NORMAL	8,473.0	1.06	87.13	8,436.29	659.96	-176.69	681.14	1.43	0.76	146.52	147.85
	NORMAL	8,568.0	0.35	193.56	8,531.28	659.72	-175.88	680.65	1.27	-0.75	112.03	163.84
	NORMAL	8,663.0	0.62	235.13	8,626.28	659.15	-176.37	680.27	0.45	0.28	43.76	74.53
	NORMAL	8,757.0	0.97	288.65	8,720.27	659.11	-177.54	680.63	0.83	0.37	56.94	93.17
	NORMAL	8,852.0	0.79	28.85	8,815.26	659.94	-177.99	681.56	1.43	-0.19	105.47	144.98
	NORMAL	8,946.0	0.62	279.96	8,909.26	660.60	-178.18	682.24	1.22	-0.18	-115.84	210.63
	NORMAL	9,041.0	0.70	178.27	9,004.26	660.11	-178.66	681.94	1.08	0.08	-107.04	221.98
	NORMAL	9,136.0	0.88	199.19	9,099.25	658.84	-178.89	680.81	0.35	0.19	22.02	68.78
9/16/2013	NORMAL	9,230.0	1.58	227.31	9,193.23	657.28	-180.08	679.74	0.96	0.74	29.91	55.41
	NORMAL	9,325.0	1.14	214.66	9,288.20	655.61	-181.58	678.67	0.56	-0.46	-13.32	208.09
	NORMAL	9,420.0	1.32	214.92	9,383.18	653.94	-182.74	677.48	0.19	0.19	0.27	1.91
	NORMAL	9,514.0	1.32	180.47	9,477.15	651.97	-183.37	675.83	0.83	0.00	-36.65	252.78
	NORMAL	9,609.0	1.41	164.91	9,572.13	649.74	-183.07	673.63	0.40	0.09	-16.38	275.79
	NORMAL	9,704.0	1.23	170.62	9,667.10	647.61	-182.60	671.46	0.23	-0.19	6.01	146.67
	NORMAL	9,799.0	0.62	205.43	9,762.09	646.14	-182.66	670.10	0.85	-0.64	36.64	153.85
9/17/2013	NORMAL	9,893.0	0.62	91.35	9,856.09	645.67	-182.37	669.55	1.11	0.00	-121.36	212.96
	NORMAL	9,988.0	0.09	163.15	9,951.09	645.58	-181.83	669.30	0.63	-0.56	75.58	171.78
	NORMAL	10,083.0	0.62	134.76	10,046.08	645.15	-181.45	668.76	0.57	0.56	-29.88	327.09
	NORMAL	10,177.0	1.32	206.75	10,140.07	643.83	-181.57	667.55	1.35	0.74	76.59	99.58
	NORMAL	10,272.0	0.70	202.97	10,235.06	642.31	-182.29	666.37	0.66	-0.65	-3.98	184.25
	NORMAL	10,366.0	1.67	340.87	10,329.05	643.08	-182.96	667.31	2.38	1.03	146.70	149.99
	NORMAL	10,461.0	1.76	5.21	10,424.01	645.84	-183.29	670.02	0.77	0.09	25.62	95.23
	NORMAL	10,556.0	1.93	353.08	10,518.96	648.88	-183.35	672.91	0.45	0.18	-12.77	287.38
	NORMAL	10,650.0	2.37	36.06	10,612.90	652.02	-182.39	675.56	1.73	0.47	45.72	96.90
9/18/2013	NORMAL	10,745.0	1.58	40.46	10,707.84	654.61	-180.39	677.33	0.85	-0.83	4.63	171.33
	NORMAL	10,840.0	1.23	30.09	10,802.81	656.49	-179.02	678.64	0.45	-0.37	-10.92	210.89
	NORMAL	10,934.0	1.06	28.85	10,896.79	658.12	-178.10	679.88	0.18	-0.18	-1.32	187.67
	NORMAL	11,029.0	0.26	343.85	10,991.79	659.10	-177.74	680.68	0.94	-0.84	-47.37	191.85
	NORMAL	11,124.0	0.70	261.94	11,086.78	659.22	-178.37	681.01	0.75	0.46	-86.22	256.88
	NORMAL	11,218.0	1.76	247.53	11,180.76	658.59	-180.27	681.04	1.17	1.13	-15.33	336.45
	NORMAL	11,313.0	2.20	245.59	11,275.70	657.28	-183.28	680.81	0.47	0.46	-2.04	350.37
	NORMAL	11,408.0	2.37	257.71	11,370.63	656.11	-186.86	680.90	0.54	0.18	12.76	76.74
	NORMAL	11,502.0	2.99	251.75	11,464.53	654.93	-191.09	681.19	0.72	0.66	-6.34	332.80
	NORMAL	11,597.0	3.25	257.11	11,559.39	653.55	-196.07	681.55	0.41	0.27	5.64	50.99
	NORMAL	11,692.0	3.43	247.00	11,654.22	651.84	-201.31	681.68	0.65	0.19	-10.64	281.90
9/19/2013	NORMAL	11,786.0	3.69	242.87	11,748.04	649.36	-206.59	681.10	0.39	0.28	-4.39	313.32
	NORMAL	11,881.0	3.87	242.08	11,842.84	646.47	-212.14	680.22	0.20	0.19	-0.83	343.47
	NORMAL	11,915.0	4.04	242.87	11,876.76	645.38	-214.22	679.89	0.53	0.50	2.32	18.17
	NORMAL	11,963.0	4.04	242.87	11,924.64	643.84	-217.23	679.44	0.00	0.00	0.00	0.00