

Deviation Summary

PICEANCE HL

1 General

1.1 Customer Information

Company	PICEANCE HL
Representative	
Address	

1.2 Well/Wellbore Information

Well	RGU 443-24-198	Wellbore No.	00
Wellbore Legal Name	RGU 443-24-198	Common Wellbore Name	RGU 443-24-198
Project	RG 24-01S-098W	Site	RGU 33-24-198 Pad
Vertical Section Azimuth	116.22 (°)	North reference	True
Origin N/S		Origin E/W	
Spud date	7/3/2014	UWI	RGU 443-24-198
Active datum	KB @6,617.0ft (above Mean Sea Level)		

2 Survey Name

2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	SDI
Date Started	7/3/2014	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 (°)
7/3/2014	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/3/2014	NORMAL	148.0	0.44	51.77	148.00	0.35	0.45	0.25	0.30	0.30	0.00	51.77
	NORMAL	240.0	2.11	90.97	239.97	0.54	2.42	1.93	1.95	1.82	42.61	48.13
	NORMAL	332.0	3.87	105.12	331.85	-0.30	7.11	6.51	2.06	1.91	15.38	29.92
	NORMAL	424.0	5.19	121.82	423.56	-3.30	13.64	13.70	2.01	1.43	18.15	53.51
	NORMAL	516.0	6.25	114.35	515.10	-7.56	21.74	22.84	1.41	1.15	-8.12	321.16
	NORMAL	593.0	6.95	115.03	591.59	-11.26	29.78	31.69	0.91	0.91	0.88	6.71
	NORMAL	686.0	7.42	116.57	683.86	-16.33	40.25	43.32	0.55	0.51	1.66	23.05
	NORMAL	778.0	7.83	115.65	775.05	-21.70	51.21	55.53	0.46	0.45	-1.00	342.96
	NORMAL	870.0	8.62	114.77	866.10	-27.30	63.12	68.69	0.87	0.86	-0.96	350.51
	NORMAL	962.0	7.56	120.04	957.19	-33.22	74.62	81.62	1.41	-1.15	5.73	147.61
	NORMAL	1,056.0	6.60	116.97	1,050.47	-38.76	84.79	93.19	1.10	-1.02	-3.27	199.99
	NORMAL	1,151.0	7.39	119.43	1,144.76	-44.24	94.98	104.75	0.89	0.83	2.59	21.99
	NORMAL	1,246.0	6.60	121.80	1,239.05	-50.12	104.94	116.28	0.89	-0.83	2.49	161.10
	NORMAL	1,340.0	6.51	120.92	1,332.44	-55.70	114.10	126.97	0.14	-0.10	-0.94	227.71
	NORMAL	1,435.0	6.16	120.57	1,426.86	-61.06	123.11	137.42	0.37	-0.37	-0.37	186.12
	NORMAL	1,530.0	6.42	118.90	1,521.29	-66.22	132.15	147.81	0.33	0.27	-1.76	324.03
	NORMAL	1,625.0	6.86	118.55	1,615.65	-71.50	141.78	158.78	0.47	0.46	-0.37	354.57
	NORMAL	1,707.0	7.13	119.46	1,697.04	-76.34	150.51	168.76	0.36	0.33	1.11	22.77
	NORMAL	1,802.0	7.00	120.79	1,791.32	-82.21	160.62	180.41	0.22	-0.14	1.40	129.13
7/4/2014	NORMAL	1,897.0	6.19	114.88	1,885.69	-87.32	170.24	191.30	1.11	-0.85	-6.22	217.05

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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)	Buird Rate (°/100usft)	Turn (°/100usft)	Tface (°)
7/4/2014	NORMAL	1,992.0	6.07	109.26	1,980.15	-91.14	179.63	201.41	0.64	-0.13	-5.92	255.91
	NORMAL	2,087.0	6.22	120.56	2,074.61	-95.41	188.80	211.53	1.28	0.16	11.89	88.57
	NORMAL	2,182.0	6.29	121.15	2,169.04	-100.72	197.69	221.84	0.10	0.07	0.62	42.86
	NORMAL	2,276.0	6.20	116.49	2,262.48	-105.65	206.64	232.05	0.55	-0.10	-4.96	257.62
	NORMAL	2,371.0	6.07	117.45	2,356.94	-110.25	215.69	242.20	0.17	-0.14	1.01	142.20
	NORMAL	2,466.0	5.89	117.96	2,451.42	-114.85	224.45	252.10	0.20	-0.19	0.54	163.81
	NORMAL	2,560.0	7.67	110.99	2,544.76	-119.36	234.57	263.17	2.08	1.89	-7.41	331.70
	NORMAL	2,655.0	7.74	112.24	2,638.91	-124.05	246.41	275.86	0.19	0.07	1.32	67.95
	NORMAL	2,750.0	8.12	111.05	2,733.00	-128.88	258.59	288.92	0.44	0.40	-1.25	336.04
	NORMAL	2,844.0	7.88	113.20	2,826.08	-133.81	270.71	301.97	0.41	-0.26	2.29	129.79
	NORMAL	2,939.0	7.75	114.71	2,920.20	-139.05	282.51	314.88	0.26	-0.14	1.59	123.09
	NORMAL	3,033.0	7.78	115.11	3,013.34	-144.40	294.03	327.57	0.07	0.03	0.43	61.16
	NORMAL	3,128.0	7.22	112.96	3,107.53	-149.46	305.35	339.96	0.66	-0.59	-2.26	205.55
7/6/2014	NORMAL	3,223.0	7.24	115.56	3,201.77	-154.37	316.25	351.91	0.35	0.02	2.74	87.79
7/7/2014	NORMAL	3,317.0	7.14	114.75	3,295.03	-159.37	326.90	363.67	0.15	-0.11	-0.86	224.99
	NORMAL	3,412.0	7.21	114.74	3,389.29	-164.34	337.67	375.53	0.07	0.07	-0.01	358.97
	NORMAL	3,507.0	8.27	109.55	3,483.42	-169.12	349.53	388.28	1.34	1.12	-5.46	324.01
	NORMAL	3,602.0	9.62	111.75	3,577.27	-174.34	363.34	402.98	1.47	1.42	2.32	15.31
	NORMAL	3,696.0	10.16	113.17	3,669.87	-180.52	378.25	419.09	0.63	0.57	1.51	25.01
	NORMAL	3,791.0	10.13	112.07	3,763.39	-186.95	393.70	435.79	0.21	-0.03	-1.16	260.66
7/12/2014	NORMAL	4,014.0	8.94	111.36	3,983.30	-200.63	428.01	472.62	0.54	-0.53	-0.32	185.29
	NORMAL	4,109.0	9.41	103.77	4,077.09	-205.17	442.43	487.55	1.37	0.49	-7.99	287.45
7/13/2014	NORMAL	4,204.0	9.63	106.85	4,170.78	-209.32	457.58	502.98	0.58	0.23	3.24	68.17
	NORMAL	4,298.0	10.58	103.09	4,263.32	-213.56	473.51	519.14	1.23	1.01	-4.00	323.36
	NORMAL	4,394.0	11.25	115.05	4,357.60	-219.52	490.58	537.09	2.46	0.70	12.46	79.45
	NORMAL	4,488.0	10.51	120.07	4,449.91	-227.70	506.31	554.81	1.28	-0.79	5.34	130.44
	NORMAL	4,583.0	10.17	116.86	4,543.37	-235.83	521.29	571.84	0.70	-0.36	-3.38	237.88
	NORMAL	4,678.0	11.31	116.18	4,636.70	-243.73	537.13	589.54	1.21	1.20	-0.72	353.32
	NORMAL	4,773.0	11.13	121.11	4,729.89	-252.57	553.34	608.00	1.03	-0.19	5.19	103.04
	NORMAL	4,867.0	11.55	118.45	4,822.06	-261.75	569.38	626.44	0.71	0.45	-2.83	307.46
	NORMAL	4,962.0	11.35	119.28	4,915.17	-270.85	585.90	645.28	0.27	-0.21	0.87	140.92
	NORMAL	5,057.0	12.15	114.10	5,008.18	-279.50	603.18	664.60	1.39	0.84	-5.45	304.62
	NORMAL	5,246.0	11.37	121.56	5,193.22	-297.38	637.21	703.03	0.90	-0.41	3.95	120.78
	NORMAL	5,341.0	11.90	116.86	5,286.27	-306.70	653.93	722.15	1.14	0.56	-4.95	296.90
	NORMAL	5,436.0	13.05	115.39	5,379.03	-315.73	672.36	742.67	1.26	1.21	-1.55	343.85
	NORMAL	5,531.0	12.99	116.86	5,471.58	-325.15	691.57	764.07	0.35	-0.06	1.55	100.98
	NORMAL	5,625.0	12.83	122.15	5,563.21	-335.48	709.83	785.02	1.27	-0.17	5.63	100.28
	NORMAL	5,720.0	12.99	127.52	5,655.81	-347.59	727.23	805.98	1.27	0.17	5.65	85.03
	NORMAL	5,815.0	12.49	119.11	5,748.48	-359.10	744.68	826.71	2.02	-0.53	-8.85	250.84
	NORMAL	5,910.0	11.73	119.84	5,841.37	-368.90	762.03	846.61	0.82	-0.80	0.77	168.96
	NORMAL	6,004.0	11.15	118.87	5,933.50	-378.04	778.28	865.22	0.65	-0.62	-1.03	197.88
	NORMAL	6,099.0	11.85	111.81	6,026.60	-386.10	795.38	884.13	1.65	0.74	-7.43	292.95
	NORMAL	6,194.0	13.45	107.48	6,119.29	-393.04	814.98	904.77	1.96	1.68	-4.56	327.22
7/14/2014	NORMAL	6,289.0	13.00	110.72	6,211.77	-400.14	835.51	926.33	0.91	-0.47	3.41	122.83
	NORMAL	6,383.0	12.78	111.47	6,303.40	-407.69	855.07	947.21	0.29	-0.23	0.80	143.11
	NORMAL	6,478.0	12.40	107.38	6,396.12	-414.58	874.59	967.76	1.02	-0.40	-4.31	244.93
	NORMAL	6,573.0	11.77	107.50	6,489.02	-420.54	893.56	987.42	0.66	-0.66	0.13	177.77
	NORMAL	6,667.0	12.01	109.44	6,581.00	-426.68	911.93	1,006.61	0.50	0.26	2.06	59.97
	NORMAL	6,762.0	11.64	105.23	6,673.98	-432.49	930.49	1,025.83	0.99	-0.39	-4.43	244.74
	NORMAL	6,857.0	10.91	111.35	6,767.15	-438.28	948.12	1,044.20	1.47	-0.77	6.44	124.36
	NORMAL	6,952.0	10.26	115.19	6,860.54	-445.15	964.15	1,061.62	1.01	-0.68	4.04	134.54
	NORMAL	7,047.0	9.25	124.19	6,954.17	-453.05	978.12	1,077.64	1.92	-1.06	9.47	127.90
	NORMAL	7,142.0	8.07	122.70	7,048.09	-460.94	990.05	1,091.83	1.26	-1.24	-1.57	190.03
	NORMAL	7,236.0	7.89	116.72	7,141.18	-467.40	1,001.36	1,104.83	0.90	-0.19	-6.36	254.82
	NORMAL	7,331.0	6.45	122.27	7,235.43	-473.18	1,011.70	1,116.66	1.68	-1.52	5.84	157.05
	NORMAL	7,426.0	5.40	132.81	7,329.93	-479.07	1,019.49	1,126.25	1.59	-1.11	11.09	139.14

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 (')
7/14/2014	NORMAL	7,520.0	4.80	142.25	7,423.56	-485.19	1,025.14	1,134.02	1.10	-0.64	10.04	130.20
	NORMAL	7,615.0	2.99	164.99	7,518.34	-490.72	1,028.22	1,139.23	2.47	-1.91	23.94	150.49
	NORMAL	7,710.0	1.67	219.50	7,613.27	-494.19	1,027.98	1,140.54	2.56	-1.39	57.38	146.05
7/15/2014	NORMAL	7,805.0	1.58	214.98	7,708.23	-496.33	1,026.35	1,140.03	0.16	-0.09	-4.76	232.68
	NORMAL	7,900.0	0.88	209.29	7,803.21	-498.04	1,025.24	1,139.79	0.75	-0.74	-5.99	187.06
	NORMAL	7,995.0	1.19	186.37	7,898.19	-499.65	1,024.77	1,140.08	0.54	0.33	-24.13	295.00
	NORMAL	8,089.0	1.20	275.29	7,992.18	-500.53	1,023.68	1,139.50	1.78	0.01	94.60	134.21
	NORMAL	8,184.0	1.46	292.41	8,087.15	-499.98	1,021.58	1,137.36	0.50	0.27	18.02	65.56
	NORMAL	8,278.0	1.38	275.88	8,181.13	-499.41	1,019.34	1,135.10	0.44	-0.09	-17.59	250.76
7/16/2014	NORMAL	8,373.0	0.23	147.18	8,276.12	-499.45	1,018.31	1,134.19	1.62	-1.21	-135.47	186.72
	NORMAL	8,468.0	0.48	139.32	8,371.12	-499.91	1,018.67	1,134.72	0.27	0.26	-8.27	345.03
	NORMAL	8,563.0	0.34	141.43	8,466.11	-500.43	1,019.11	1,135.35	0.15	-0.15	2.22	174.90
	NORMAL	8,658.0	0.38	142.13	8,561.11	-500.90	1,019.47	1,135.88	0.04	0.04	0.74	6.62
	NORMAL	8,753.0	0.45	154.10	8,656.11	-501.49	1,019.83	1,136.46	0.12	0.07	12.60	57.17
	NORMAL	8,847.0	0.51	175.56	8,750.11	-502.24	1,020.02	1,136.97	0.20	0.06	22.83	82.48
	NORMAL	8,942.0	0.60	160.44	8,845.10	-503.13	1,020.22	1,137.54	0.18	0.09	-15.92	293.86
	NORMAL	9,036.0	0.71	166.98	8,939.10	-504.16	1,020.52	1,138.26	0.14	0.12	6.96	37.50
	NORMAL	9,131.0	0.85	170.41	9,034.09	-505.43	1,020.77	1,139.04	0.16	0.15	3.61	20.16
	NORMAL	9,226.0	1.15	129.12	9,129.07	-506.72	1,021.63	1,140.39	0.80	0.32	-43.46	271.07
	NORMAL	9,321.0	1.04	131.94	9,224.06	-507.90	1,023.01	1,142.14	0.13	-0.12	2.97	155.30
	NORMAL	9,416.0	0.98	136.90	9,319.04	-509.07	1,024.20	1,143.73	0.11	-0.06	5.22	126.92
7/17/2014	NORMAL	9,510.0	1.04	123.49	9,413.03	-510.13	1,025.46	1,145.33	0.26	0.06	-14.27	277.48
	NORMAL	9,605.0	1.08	150.87	9,508.01	-511.39	1,026.62	1,146.92	0.53	0.04	28.82	99.26
	NORMAL	9,700.0	1.24	136.48	9,602.99	-512.91	1,027.76	1,148.63	0.35	0.17	-15.15	291.46
	NORMAL	9,795.0	1.41	142.52	9,697.97	-514.59	1,029.18	1,150.64	0.23	0.18	6.36	42.45
	NORMAL	9,890.0	0.30	132.72	9,792.96	-515.68	1,030.08	1,151.92	1.17	-1.17	-10.32	182.62
	NORMAL	9,984.0	0.32	8.13	9,886.96	-515.59	1,030.29	1,152.08	0.58	0.02	-132.54	208.68
	NORMAL	10,079.0	0.11	79.52	9,981.96	-515.31	1,030.42	1,152.07	0.32	-0.22	75.15	159.90
	NORMAL	10,174.0	0.22	197.47	10,076.96	-515.47	1,030.46	1,152.17	0.30	0.12	124.16	137.64
	NORMAL	10,269.0	0.29	216.11	10,171.96	-515.84	1,030.26	1,152.16	0.11	0.07	19.62	59.41
	NORMAL	10,363.0	0.40	222.75	10,265.95	-516.27	1,029.90	1,152.02	0.12	0.12	7.06	23.32
	NORMAL	10,458.0	0.41	140.54	10,360.95	-516.77	1,029.89	1,152.24	0.56	0.01	-86.54	229.71
7/18/2014	NORMAL	10,553.0	0.77	133.92	10,455.95	-517.48	1,030.56	1,153.16	0.39	0.38	-6.97	345.96
	NORMAL	10,648.0	0.17	347.37	10,550.94	-517.79	1,030.99	1,153.68	0.96	-0.63	-154.26	185.87
	NORMAL	10,742.0	0.20	326.45	10,644.94	-517.51	1,030.87	1,153.45	0.08	0.03	-22.26	283.25
	NORMAL	10,837.0	2.04	315.91	10,739.92	-516.16	1,029.60	1,151.71	1.94	1.94	-11.09	348.32
	NORMAL	10,931.0	1.76	325.91	10,833.87	-513.76	1,027.63	1,148.88	0.46	-0.30	10.64	135.11
	NORMAL	11,026.0	1.00	356.60	10,928.84	-511.73	1,026.76	1,147.20	1.09	-0.80	32.31	150.44
	NORMAL	11,121.0	0.90	336.73	11,023.83	-510.21	1,026.42	1,146.23	0.36	-0.11	-20.92	243.34
	NORMAL	11,216.0	0.26	356.23	11,118.83	-509.31	1,026.11	1,145.55	0.70	-0.67	20.53	172.45
	NORMAL	11,311.0	1.39	311.07	11,213.82	-508.34	1,025.23	1,144.33	1.28	1.19	-47.54	306.15
7/19/2014	NORMAL	11,405.0	0.99	305.44	11,307.80	-507.12	1,023.71	1,142.43	0.44	-0.43	-5.99	193.49
	NORMAL	11,500.0	0.77	337.29	11,402.79	-506.06	1,022.79	1,141.14	0.55	-0.23	33.53	129.58
	NORMAL	11,595.0	0.50	294.67	11,497.78	-505.29	1,022.17	1,140.24	0.55	-0.28	-44.86	220.10
	NORMAL	11,689.0	1.02	270.71	11,591.77	-505.11	1,020.96	1,139.07	0.64	0.55	-25.49	316.21
	NORMAL	11,784.0	0.80	263.73	11,686.76	-505.18	1,019.45	1,137.75	0.26	-0.23	-7.35	203.28
	NORMAL	11,878.0	0.42	240.04	11,780.75	-505.42	1,018.50	1,137.01	0.48	-0.40	-25.20	202.11
	NORMAL	11,973.0	0.39	222.78	11,875.75	-505.83	1,017.98	1,136.72	0.13	-0.03	-18.17	247.66
	NORMAL	12,068.0	0.35	183.16	11,970.75	-506.36	1,017.75	1,136.74	0.27	-0.04	-41.71	241.66
	NORMAL	12,162.0	0.34	98.83	12,064.75	-506.69	1,018.01	1,137.12	0.49	-0.01	-89.71	226.92
	NORMAL	12,257.0	0.07	171.99	12,159.75	-506.79	1,018.29	1,137.42	0.34	-0.28	77.01	168.16
	NORMAL	12,352.0	0.11	80.84	12,254.75	-506.83	1,018.39	1,137.53	0.14	0.04	-95.95	236.71
	NORMAL	12,446.0	0.14	41.17	12,348.75	-506.73	1,018.56	1,137.63	0.10	0.03	-42.20	268.57
7/20/2014	NORMAL	12,541.0	1.35	59.09	12,443.74	-506.07	1,019.59	1,138.27	1.28	1.27	18.86	19.95
	NORMAL	12,633.0	1.03	76.73	12,535.72	-505.32	1,021.33	1,139.50	0.52	-0.35	19.17	139.73
	NORMAL	12,727.0	0.92	78.50	12,629.71	-504.98	1,022.89	1,140.75	0.12	-0.12	1.88	165.57

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 (°)
7/20/2014	NORMAL	12,794.0	0.96	90.87	12,696.70	-504.88	1,023.98	1,141.68	0.31	0.06	18.46	85.08
	NORMAL	12,852.0	0.96	90.87	12,754.69	-504.89	1,024.95	1,142.56	0.00	0.00	0.00	0.00