

# 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	RG 511-14-298	Wellbore No.	00
Wellbore Legal Name	RG 511-14-298	Common Wellbore Name	RG 511-14-298
Project	RG 14-02S-098W	Site	RG 12-14-298 Pad
Vertical Section Azimuth	19.55 (°)	North reference	True
Origin N/S		Origin E/W	
Spud date	2/21/2014	UWI	RG 511-14-298
Active datum	KB @6,581.0ft (above Mean Sea Level)		

## 2 Survey Name

### 2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	
Date Started	2/21/2014	Ended	
Tool Name	MWD	Engineer	

#### 2.1.1 Tie On Point

MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	E/W (ft)
		71.89			

#### 2.1.2 Survey Stations

1523

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 (°)
2/21/2014	NORMAL	144.0	1.14	71.89	143.99	0.45	1.36	0.88	0.79	0.79	0.00	71.89
	NORMAL	236.0	2.02	39.64	235.96	1.98	3.27	2.96	1.32	0.96	-35.05	297.81
	NORMAL	328.0	4.22	23.38	327.82	6.33	5.64	7.86	2.55	2.39	-17.67	329.83
	NORMAL	420.0	6.16	23.64	419.44	13.96	8.97	16.16	2.11	2.11	0.28	0.82
	NORMAL	513.0	6.16	19.25	511.90	23.25	12.61	26.13	0.51	0.00	-4.72	267.82
	NORMAL	605.0	6.33	17.05	603.35	32.75	15.73	36.13	0.32	0.18	-2.39	304.29
	NORMAL	697.0	5.45	20.74	694.87	41.69	18.76	45.56	1.04	-0.96	4.01	158.55
	NORMAL	789.0	6.33	20.83	786.38	50.52	22.11	55.00	0.96	0.96	0.10	0.65
	NORMAL	882.0	6.33	23.12	878.81	60.02	25.95	65.25	0.27	0.00	2.46	91.14
	NORMAL	954.0	5.96	24.09	950.40	67.09	29.03	72.93	0.53	-0.51	1.35	164.81
2/21/2014	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/22/2014	NORMAL	1,048.0	6.52	22.98	1,043.84	76.45	33.11	83.13	0.61	0.60	-1.18	347.29
	NORMAL	1,142.0	6.22	24.52	1,137.26	86.00	37.31	93.53	0.37	-0.32	1.64	151.10
	NORMAL	1,174.0	5.70	24.83	1,169.09	89.02	38.69	96.84	1.63	-1.63	0.97	176.61
	NORMAL	1,269.0	5.56	20.93	1,263.63	97.60	42.32	106.13	0.43	-0.15	-4.11	247.97
	NORMAL	1,364.0	6.61	22.67	1,358.10	106.94	46.07	116.20	1.12	1.11	1.83	10.83
	NORMAL	1,458.0	6.80	16.88	1,451.45	117.26	49.77	127.16	0.75	0.20	-6.16	282.81
	NORMAL	1,553.0	6.67	15.16	1,545.80	127.97	52.85	138.28	0.25	-0.14	-1.81	236.35
	NORMAL	1,648.0	7.16	17.14	1,640.11	138.95	56.03	149.69	0.57	0.52	2.08	26.93
	NORMAL	1,743.0	7.14	17.53	1,734.37	150.24	59.56	161.51	0.06	-0.02	0.41	112.59
	NORMAL	1,838.0	7.03	17.62	1,828.64	161.41	63.09	173.22	0.12	-0.12	0.09	174.28

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 (°)
2/22/2014	NORMAL	1,933.0	6.75	18.33	1,922.96	172.25	66.61	184.61	0.31	-0.29	0.75	163.43
	NORMAL	2,028.0	7.00	18.10	2,017.28	183.05	70.16	195.98	0.26	0.26	-0.24	353.60
	NORMAL	2,122.0	6.74	18.80	2,110.60	193.72	73.72	207.22	0.29	-0.28	0.74	162.50
	NORMAL	2,217.0	7.38	22.86	2,204.88	204.62	77.89	218.89	0.85	0.67	4.27	39.97
	NORMAL	2,312.0	6.64	26.11	2,299.17	215.17	82.68	230.43	0.88	-0.78	3.42	153.42
	NORMAL	2,406.0	6.08	21.48	2,392.59	224.69	86.89	240.81	0.81	-0.60	-4.93	220.20
	NORMAL	2,501.0	5.35	17.18	2,487.12	233.60	90.04	250.26	0.89	-0.77	-4.53	208.27
	NORMAL	2,596.0	5.45	29.22	2,581.70	241.77	93.55	259.13	1.20	0.11	12.67	90.97
	NORMAL	2,691.0	6.93	26.95	2,676.15	250.81	98.35	269.27	1.58	1.56	-2.39	349.48
	NORMAL	2,785.0	6.98	26.17	2,769.45	261.00	103.44	280.56	0.11	0.05	-0.83	297.51
	NORMAL	2,880.0	5.47	23.93	2,863.89	270.31	107.82	290.81	1.61	-1.59	-2.36	188.03
	NORMAL	2,975.0	4.78	17.36	2,958.51	278.23	110.84	299.28	0.95	-0.73	-6.92	217.14
3/12/2014	NORMAL	3,094.0	3.89	13.02	3,077.17	286.90	113.23	308.25	0.80	-0.75	-3.65	198.08
	NORMAL	3,157.0	3.69	14.34	3,140.03	290.94	114.21	312.39	0.35	-0.32	2.10	157.09
	NORMAL	3,252.0	5.01	14.17	3,234.76	297.93	115.99	319.56	1.39	1.39	-0.18	359.36
	NORMAL	3,347.0	5.93	17.61	3,329.32	306.63	118.49	328.60	1.03	0.97	3.62	21.34
	NORMAL	3,441.0	5.85	10.42	3,422.83	315.97	120.82	338.18	0.79	-0.09	-7.65	260.24
	NORMAL	3,536.0	6.49	15.71	3,517.28	325.90	123.15	348.32	0.90	0.67	5.57	44.27
	NORMAL	3,631.0	6.71	20.62	3,611.65	336.26	126.56	359.22	0.64	0.23	5.17	71.15
	NORMAL	3,725.0	7.90	15.17	3,704.89	347.63	130.18	371.16	1.46	1.27	-5.80	327.06
	NORMAL	3,820.0	8.56	16.28	3,798.91	360.72	133.87	384.73	0.71	0.69	1.17	14.09
	NORMAL	3,915.0	8.82	21.26	3,892.82	374.30	138.50	399.06	0.84	0.27	5.24	73.41
	NORMAL	4,010.0	7.32	19.80	3,986.88	386.78	143.19	412.40	1.59	-1.58	-1.54	187.06
	NORMAL	4,104.0	5.01	17.07	4,080.33	396.34	146.42	422.49	2.48	-2.46	-2.90	185.88
	NORMAL	4,199.0	5.54	8.63	4,174.93	404.84	148.33	431.13	0.99	0.56	-8.88	300.08
3/13/2014	NORMAL	4,293.0	8.97	23.31	4,268.17	416.06	151.91	442.91	4.12	3.65	15.62	35.81
	NORMAL	4,388.0	10.38	21.90	4,361.81	430.80	158.03	458.85	1.50	1.48	-1.48	349.76
	NORMAL	4,483.0	9.67	26.83	4,455.37	445.86	164.83	475.31	1.17	-0.75	5.19	132.01
	NORMAL	4,578.0	9.06	29.02	4,549.10	459.52	172.06	490.61	0.74	-0.64	2.31	150.78
	NORMAL	4,673.0	8.97	27.53	4,642.93	472.63	179.11	505.32	0.26	-0.09	-1.57	248.18
	NORMAL	4,767.0	8.00	24.19	4,735.90	485.10	185.18	519.10	1.16	-1.03	-3.55	205.29
	NORMAL	4,862.0	6.51	24.10	4,830.13	496.04	190.08	531.06	1.57	-1.57	-0.09	180.39
	NORMAL	4,957.0	6.16	25.33	4,924.55	505.57	194.46	541.49	0.40	-0.37	1.29	159.42
	NORMAL	5,052.0	4.92	26.47	5,019.11	513.82	198.46	550.61	1.31	-1.31	1.20	175.50
	NORMAL	5,146.0	4.57	25.95	5,112.79	520.80	201.90	558.33	0.38	-0.37	-0.55	186.75
	NORMAL	5,241.0	4.31	24.80	5,207.50	527.44	205.05	565.65	0.29	-0.27	-1.21	198.33
	NORMAL	5,336.0	3.52	19.18	5,302.28	533.44	207.51	572.12	0.92	-0.83	-5.92	203.12
	NORMAL	5,431.0	3.25	23.31	5,397.11	538.66	209.53	577.72	0.38	-0.28	4.35	139.96
	NORMAL	5,526.0	4.31	30.52	5,491.91	544.21	212.41	583.92	1.22	1.12	7.59	27.78
	NORMAL	5,620.0	3.97	29.33	5,585.66	550.09	215.80	590.59	0.37	-0.36	-1.27	193.59
	NORMAL	5,715.0	3.87	29.64	5,680.44	555.75	218.99	596.99	0.11	-0.11	0.33	168.19
	NORMAL	5,810.0	2.99	27.09	5,775.27	560.74	221.71	602.60	0.94	-0.93	-2.68	188.56
	NORMAL	5,904.0	2.46	28.58	5,869.16	564.69	223.79	607.02	0.57	-0.56	1.59	173.13
	NORMAL	5,999.0	2.31	32.78	5,964.08	568.09	225.80	610.90	0.24	-0.16	4.42	132.72
3/14/2014	NORMAL	6,094.0	1.49	36.76	6,059.03	570.69	227.57	613.94	0.87	-0.86	4.19	172.84
	NORMAL	6,188.0	1.93	19.53	6,152.99	573.16	228.84	616.69	0.71	0.47	-18.33	301.73
	NORMAL	6,283.0	1.58	9.95	6,247.94	575.96	229.60	619.59	0.48	-0.37	-10.08	215.25
	NORMAL	6,378.0	2.29	41.33	6,342.89	578.67	231.08	622.64	1.32	0.75	33.03	72.53
	NORMAL	6,472.0	1.14	58.55	6,436.85	580.57	233.11	625.11	1.33	-1.22	18.32	164.31
	NORMAL	6,567.0	0.88	58.20	6,531.83	581.45	234.54	626.41	0.27	-0.27	-0.37	181.18
	NORMAL	6,662.0	0.53	212.45	6,626.83	581.46	234.92	626.56	1.45	-0.37	162.37	170.37
	NORMAL	6,756.0	0.79	214.21	6,720.82	580.56	234.33	625.50	0.28	0.28	1.87	5.34
	NORMAL	6,851.0	1.23	231.26	6,815.81	579.38	233.16	624.00	0.56	0.46	17.95	43.06
	NORMAL	6,946.0	0.44	312.65	6,910.80	578.99	232.10	623.28	1.31	-0.83	85.67	159.51
	NORMAL	7,041.0	0.70	252.88	7,005.80	579.07	231.28	623.08	0.64	0.27	-62.92	261.76
	NORMAL	7,136.0	0.44	39.66	7,100.79	579.18	230.96	623.07	1.15	-0.27	154.51	167.28

## 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 (")
3/14/2014	NORMAL	7,230.0	0.09	329.78	7,194.79	579.52	231.15	623.46	0.44	-0.37	-74.34	191.67
	NORMAL	7,325.0	0.44	336.90	7,289.79	579.92	230.97	623.78	0.37	0.37	7.49	8.94
	NORMAL	7,420.0	0.53	50.73	7,384.79	580.53	231.16	624.42	0.62	0.09	77.72	119.87
	NORMAL	7,514.0	0.35	2.30	7,478.79	581.09	231.51	625.07	0.42	-0.19	-51.52	221.33
	NORMAL	7,609.0	1.11	37.68	7,573.78	582.11	232.09	626.22	0.89	0.80	37.24	49.19
	NORMAL	7,704.0	0.44	346.40	7,668.77	583.20	232.56	627.40	0.95	-0.71	-53.98	202.36
	NORMAL	7,799.0	0.79	69.63	7,763.77	583.78	233.09	628.12	0.90	0.37	87.61	113.85
	NORMAL	7,893.0	1.14	51.52	7,857.75	584.59	234.43	629.33	0.49	0.37	-19.27	309.64
	NORMAL	7,988.0	0.70	53.72	7,952.74	585.52	235.64	630.61	0.46	-0.46	2.32	176.51
	NORMAL	8,083.0	0.21	96.72	8,047.74	585.84	236.28	631.13	0.59	-0.52	45.26	165.31
	NORMAL	8,177.0	0.55	193.71	8,141.74	585.38	236.34	630.72	0.65	0.36	103.18	116.90
3/15/2014	NORMAL	8,272.0	0.97	224.32	8,236.73	584.36	235.67	629.54	0.60	0.44	32.22	60.03
	NORMAL	8,367.0	1.85	224.84	8,331.70	582.70	234.03	627.42	0.93	0.93	0.55	1.09
	NORMAL	8,462.0	1.93	243.56	8,426.65	580.90	231.52	624.88	0.65	0.08	19.71	92.04
	NORMAL	8,556.0	1.76	245.41	8,520.60	579.60	228.79	622.74	0.19	-0.18	1.97	161.61
	NORMAL	8,641.0	0.88	351.23	8,605.59	579.70	227.50	622.41	2.55	-1.04	124.49	157.05
	NORMAL	8,746.0	0.98	6.80	8,710.57	581.39	227.48	623.99	0.26	0.10	14.83	76.32
	NORMAL	8,840.0	0.79	331.81	8,804.56	582.76	227.27	625.21	0.60	-0.20	-37.22	233.70
	NORMAL	8,935.0	0.70	293.48	8,899.56	583.56	226.43	625.69	0.52	-0.09	-40.35	240.98
3/16/2014	NORMAL	9,030.0	1.39	253.16	8,994.54	583.46	224.80	625.05	1.02	0.73	-42.44	291.81
	NORMAL	9,124.0	2.20	251.47	9,088.49	582.56	221.99	623.26	0.86	0.66	-1.80	355.42
	NORMAL	9,220.0	1.23	273.09	9,184.45	582.03	219.22	621.83	1.20	-1.01	22.52	156.78
	NORMAL	9,315.0	0.53	11.18	9,279.44	582.51	218.29	621.98	1.48	-0.74	103.25	158.09
	NORMAL	9,409.0	0.37	66.74	9,373.44	583.06	218.65	622.61	0.47	-0.17	59.11	136.43
	NORMAL	9,504.0	1.41	93.09	9,468.43	583.12	220.10	623.15	1.15	1.09	27.74	35.01
	NORMAL	9,599.0	2.29	70.51	9,563.38	583.69	223.05	624.68	1.19	0.93	-23.77	308.71
	NORMAL	9,693.0	1.14	46.25	9,657.34	584.96	225.50	626.70	1.42	-1.22	-25.81	200.53
	NORMAL	9,788.0	1.85	47.13	9,752.30	586.66	227.31	628.90	0.75	0.75	0.93	2.29
	NORMAL	9,883.0	0.79	29.20	9,847.28	588.27	228.75	630.91	1.18	-1.12	-18.87	192.49
	NORMAL	9,977.0	0.53	10.57	9,941.27	589.27	229.15	631.97	0.36	-0.28	-19.82	210.47
	NORMAL	10,072.0	0.88	249.89	10,036.27	589.45	228.54	631.94	1.30	0.37	-127.03	217.71
	NORMAL	10,166.0	1.67	214.12	10,130.25	588.07	227.10	630.16	1.15	0.84	-38.05	295.95
	NORMAL	10,261.0	1.85	226.78	10,225.20	585.87	225.20	627.45	0.45	0.19	13.33	71.58
	NORMAL	10,355.0	2.11	237.59	10,319.15	583.90	222.63	624.74	0.48	0.28	11.50	60.64
	NORMAL	10,450.0	1.93	231.35	10,414.09	581.97	219.91	622.00	0.30	-0.19	-6.57	227.61
	NORMAL	10,545.0	2.55	234.60	10,509.01	579.74	216.94	618.91	0.67	0.65	3.42	13.21
	NORMAL	10,640.0	2.72	239.87	10,603.91	577.39	213.26	615.47	0.31	0.18	5.55	57.60
	NORMAL	10,735.0	2.99	228.01	10,698.80	574.60	209.47	611.57	0.68	0.28	-12.48	288.56
	NORMAL	10,830.0	3.68	227.56	10,793.64	570.88	205.38	606.70	0.73	0.73	-0.47	357.60
3/17/2014	NORMAL	10,924.0	4.04	227.92	10,887.42	566.63	200.70	601.12	0.38	0.38	0.38	4.03
	NORMAL	10,949.0	4.13	226.42	10,912.36	565.42	199.39	599.54	0.56	0.36	-6.00	309.36
	NORMAL	11,010.0	4.13	226.42	10,973.20	562.39	196.21	595.62	0.00	0.00	0.00	0.00