

# Deviation Summary

PICEANCE VLY

## 1 General

### 1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

### 1.2 Well/Wellbore Information

Well	RU 332-5	Wellbore No.	00
Wellbore Legal Name	RU 332-5	Common Wellbore Name	RU 332-5
Project	RU 05-07S-093W	Site	RU 23-5 Pad
Vertical Section Azimuth	146.22 (°)	North reference	True
Origin N/S		Origin E/W	
Spud date	8/11/2013	UWI	RU 332-5
Active datum	KB @7,627.0ft (above Mean Sea Level)		

## 2 Survey Name

### 2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	
Date Started	8/11/2013	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 (°)
8/11/2013	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/11/2013	NORMAL	158.0	1.73	138.25	157.98	-1.78	1.59	2.36	1.09	1.09	0.00	138.25
	NORMAL	250.0	4.73	156.86	249.82	-6.30	4.00	7.47	3.41	3.26	20.23	28.72
	NORMAL	340.0	7.40	148.70	339.31	-14.67	8.47	16.91	3.11	2.97	-9.07	338.02
	NORMAL	432.0	10.34	145.94	430.20	-26.58	16.18	31.08	3.23	3.20	-3.00	350.40
	NORMAL	524.0	11.52	144.12	520.53	-40.86	26.19	48.52	1.34	1.28	-1.98	342.80
	NORMAL	615.0	12.72	141.83	609.50	-56.10	37.70	67.59	1.42	1.32	-2.52	337.04
	NORMAL	707.0	11.10	148.39	699.52	-71.61	48.61	86.54	2.29	-1.76	7.13	143.29
	NORMAL	800.0	11.85	147.80	790.66	-87.31	58.39	105.03	0.82	0.81	-0.63	350.82
	NORMAL	892.0	10.35	148.50	880.94	-102.35	67.74	122.74	1.64	-1.63	0.76	175.21
	NORMAL	984.0	10.99	146.10	971.35	-116.68	76.95	139.76	0.85	0.70	-2.61	324.04
	NORMAL	1,075.0	11.51	143.27	1,060.60	-131.15	87.22	157.50	0.83	0.57	-3.11	311.89
8/14/2013	NORMAL	1,172.0	12.26	144.69	1,155.52	-147.31	98.96	177.47	0.83	0.77	1.46	22.00
	NORMAL	1,267.0	12.86	144.39	1,248.25	-164.14	110.94	198.12	0.64	0.63	-0.32	353.65
	NORMAL	1,362.0	11.68	147.14	1,341.08	-180.81	122.32	218.30	1.39	-1.24	2.89	154.99
	NORMAL	1,457.0	12.16	147.63	1,434.03	-197.34	132.89	237.92	0.52	0.51	0.52	12.15
	NORMAL	1,553.0	11.12	145.96	1,528.05	-213.55	143.49	257.28	1.14	-1.08	-1.74	197.13
	NORMAL	1,648.0	11.65	143.95	1,621.19	-228.90	154.26	276.03	0.70	0.56	-2.12	322.19
	NORMAL	1,744.0	11.33	145.19	1,715.26	-244.48	165.35	295.14	0.42	-0.33	1.29	142.94
	NORMAL	1,839.0	11.05	143.98	1,808.46	-259.50	176.03	313.57	0.38	-0.29	-1.27	219.39
	NORMAL	1,935.0	10.86	144.04	1,902.71	-274.27	186.75	331.80	0.20	-0.20	0.06	176.60

## 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 (")
8/14/2013	NORMAL	2,030.0	11.23	147.27	1,995.95	-289.29	197.01	349.99	0.76	0.39	3.40	60.72
	NORMAL	2,126.0	11.50	146.56	2,090.07	-305.14	207.33	368.91	0.32	0.28	-0.74	332.26
	NORMAL	2,222.0	11.55	146.59	2,184.13	-321.15	217.90	388.09	0.05	0.05	0.03	6.85
	NORMAL	2,317.0	11.05	146.21	2,277.29	-336.65	228.20	406.70	0.53	-0.53	-0.40	188.28
	NORMAL	2,412.0	10.82	146.62	2,370.56	-351.67	238.17	424.72	0.26	-0.24	0.43	161.52
	NORMAL	2,507.0	11.76	145.13	2,463.72	-367.06	248.61	443.32	1.04	0.99	-1.57	342.03
	NORMAL	2,603.0	12.08	145.10	2,557.65	-383.32	259.95	463.14	0.33	0.33	-0.03	358.88
	NORMAL	2,697.0	12.03	145.63	2,649.58	-399.47	271.11	482.77	0.13	-0.05	0.56	114.57
	NORMAL	2,791.0	11.75	145.13	2,741.57	-415.41	282.11	502.14	0.32	-0.30	-0.53	199.95
	NORMAL	2,886.0	11.43	145.30	2,834.63	-431.09	293.00	521.22	0.34	-0.34	0.18	173.99
	NORMAL	2,981.0	11.09	145.01	2,927.80	-446.31	303.60	539.77	0.36	-0.36	-0.31	189.31
	NORMAL	3,075.0	10.82	144.60	3,020.09	-460.91	313.89	557.63	0.30	-0.29	-0.44	195.90
	NORMAL	3,170.0	11.61	147.06	3,113.27	-476.20	324.26	576.10	0.97	0.83	2.59	32.41
	NORMAL	3,266.0	12.17	146.98	3,207.21	-492.79	335.02	595.87	0.58	0.58	-0.08	358.27
8/15/2013	NORMAL	3,360.0	12.05	147.50	3,299.12	-509.38	345.70	615.59	0.17	-0.13	0.55	137.98
	NORMAL	3,455.0	11.83	147.40	3,392.07	-525.94	356.27	635.24	0.23	-0.23	-0.11	185.32
	NORMAL	3,550.0	11.78	147.52	3,485.06	-542.33	366.72	654.67	0.06	-0.05	0.13	153.91
	NORMAL	3,646.0	11.52	146.80	3,579.08	-558.62	377.23	674.05	0.31	-0.27	-0.75	208.86
	NORMAL	3,741.0	11.17	148.11	3,672.22	-574.37	387.29	692.74	0.46	-0.37	1.38	144.28
	NORMAL	3,836.0	11.26	147.94	3,765.41	-590.04	397.07	711.20	0.10	0.09	-0.18	339.74
	NORMAL	3,932.0	10.90	147.70	3,859.62	-605.66	406.90	729.65	0.38	-0.38	-0.25	187.18
	NORMAL	4,027.0	10.88	148.44	3,952.91	-620.89	416.39	747.58	0.15	-0.02	0.78	98.50
	NORMAL	4,123.0	10.95	149.28	4,047.17	-636.45	425.79	765.74	0.18	0.07	0.88	66.66
	NORMAL	4,218.0	10.81	144.56	4,140.47	-651.46	435.57	783.66	0.95	-0.15	-4.97	258.76
	NORMAL	4,314.0	10.78	145.66	4,234.77	-666.23	445.83	801.63	0.26	-0.03	1.35	97.66
	NORMAL	4,409.0	11.34	141.62	4,328.01	-680.90	456.61	819.83	1.04	0.59	-4.46	302.45
	NORMAL	4,505.0	11.42	141.72	4,422.12	-695.76	468.36	838.71	0.09	0.08	0.10	13.90
	NORMAL	4,601.0	11.17	141.71	4,516.26	-710.52	480.01	857.46	0.26	-0.26	-0.01	180.44
	NORMAL	4,695.0	11.05	142.66	4,608.50	-724.83	491.11	875.52	0.23	-0.13	1.01	123.71
	NORMAL	4,790.0	11.20	144.01	4,701.71	-739.53	502.06	893.83	0.32	0.16	1.42	60.73
	NORMAL	4,886.0	10.87	144.38	4,795.94	-754.43	512.81	912.19	0.35	-0.34	0.39	168.07
	NORMAL	4,982.0	11.20	141.87	4,890.16	-769.13	523.84	930.54	0.61	0.34	-2.61	303.25
	NORMAL	5,077.0	10.99	141.35	4,983.39	-783.46	535.19	948.76	0.24	-0.22	-0.55	205.22
	NORMAL	5,172.0	10.90	141.96	5,076.66	-797.60	546.38	966.74	0.15	-0.09	0.64	128.15
	NORMAL	5,268.0	10.82	141.43	5,170.94	-811.79	557.59	984.77	0.13	-0.08	-0.55	231.04
	NORMAL	5,364.0	10.99	142.05	5,265.21	-826.06	568.84	1,002.88	0.22	0.18	0.65	34.91
	NORMAL	5,460.0	11.34	142.40	5,359.39	-840.75	580.22	1,021.42	0.37	0.36	0.36	11.13
	NORMAL	5,555.0	11.17	143.46	5,452.56	-855.54	591.40	1,039.93	0.28	-0.18	1.12	129.93
8/16/2013	NORMAL	5,651.0	10.38	141.35	5,546.87	-869.77	602.34	1,057.84	0.92	-0.82	-2.20	205.50
	NORMAL	5,747.0	10.29	141.87	5,641.31	-883.27	613.03	1,075.00	0.14	-0.09	0.54	134.23
	NORMAL	5,843.0	8.86	140.33	5,735.98	-895.70	623.05	1,090.91	1.51	-1.49	-1.60	189.40
	NORMAL	5,937.0	8.99	141.53	5,828.84	-907.02	632.24	1,105.43	0.24	0.14	1.28	55.67
	NORMAL	6,032.0	8.36	143.76	5,922.75	-918.41	640.94	1,119.72	0.75	-0.66	2.35	153.00
	NORMAL	6,128.0	6.63	144.29	6,017.93	-928.54	648.30	1,132.24	1.80	-1.80	0.55	177.97
	NORMAL	6,224.0	5.46	133.23	6,113.39	-936.16	654.86	1,142.23	1.71	-1.22	-11.52	219.46
	NORMAL	6,319.0	5.53	132.10	6,207.96	-942.33	661.55	1,151.07	0.14	0.07	-1.19	302.34
	NORMAL	6,414.0	5.36	138.62	6,302.53	-948.73	667.88	1,159.91	0.67	-0.18	6.86	108.59
8/17/2013	NORMAL	6,507.0	4.72	142.68	6,395.17	-955.03	673.07	1,168.03	0.79	-0.69	4.37	152.88
	NORMAL	6,603.0	3.05	150.49	6,490.95	-960.39	676.73	1,174.52	1.82	-1.74	8.14	166.29
	NORMAL	6,698.0	1.32	148.82	6,585.88	-963.53	678.54	1,178.14	1.82	-1.82	-1.76	181.27
	NORMAL	6,794.0	0.28	20.50	6,681.87	-964.26	679.19	1,179.10	1.57	-1.08	-133.67	188.37
	NORMAL	6,889.0	0.44	334.44	6,776.87	-963.71	679.12	1,178.61	0.33	0.17	-48.48	274.57
	NORMAL	6,984.0	0.24	298.12	6,871.87	-963.29	678.78	1,178.07	0.30	-0.21	-38.23	209.96
8/18/2013	NORMAL	7,080.0	0.09	322.03	6,967.86	-963.13	678.56	1,177.82	0.17	-0.16	24.91	166.98
	NORMAL	7,175.0	0.17	49.51	7,062.86	-962.98	678.62	1,177.73	0.20	0.08	92.08	115.92
	NORMAL	7,270.0	0.42	94.59	7,157.86	-962.92	679.07	1,177.93	0.34	0.26	47.45	66.95

## 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 (°)
8/18/2013	NORMAL	7,366.0	0.53	166.99	7,253.86	-963.38	679.53	1,178.56	0.59	0.11	75.42	117.21
	NORMAL	7,461.0	0.30	140.52	7,348.86	-964.00	679.78	1,179.22	0.31	-0.24	-27.86	207.09
	NORMAL	7,556.0	0.10	58.51	7,443.86	-964.15	680.01	1,179.47	0.32	-0.21	-86.33	199.09
	NORMAL	7,652.0	0.09	132.46	7,539.86	-964.16	680.14	1,179.55	0.12	-0.01	77.03	130.97
	NORMAL	7,747.0	0.26	51.43	7,634.86	-964.07	680.36	1,179.60	0.28	0.18	-85.29	259.10
	NORMAL	7,842.0	1.06	33.56	7,729.85	-963.20	681.02	1,179.24	0.86	0.84	-18.81	336.52
	NORMAL	7,937.0	1.06	40.54	7,824.84	-961.80	682.07	1,178.67	0.14	0.00	7.35	93.49
8/19/2013	NORMAL	8,032.0	0.80	29.20	7,919.82	-960.56	682.97	1,178.13	0.33	-0.27	-11.94	209.71
	NORMAL	8,128.0	0.54	17.82	8,015.82	-959.54	683.43	1,177.54	0.30	-0.27	-11.85	201.49
	NORMAL	8,223.0	0.44	23.66	8,110.81	-958.78	683.72	1,177.07	0.12	-0.11	6.15	156.36
	NORMAL	8,319.0	0.23	249.97	8,206.81	-958.51	683.68	1,176.82	0.65	-0.22	-139.26	195.52
	NORMAL	8,415.0	0.27	269.04	8,302.81	-958.58	683.28	1,176.66	0.10	0.04	19.86	74.07
	NORMAL	8,510.0	0.62	217.38	8,397.81	-958.99	682.74	1,176.70	0.53	0.37	-54.38	283.26
	NORMAL	8,605.0	0.70	232.17	8,492.80	-959.76	681.97	1,176.91	0.20	0.08	15.57	72.36
	NORMAL	8,700.0	0.70	219.39	8,587.80	-960.56	681.14	1,177.12	0.16	0.00	-13.45	263.61
	NORMAL	8,796.0	0.35	167.19	8,683.79	-961.30	680.84	1,177.56	0.58	-0.36	-54.37	209.67
	NORMAL	8,890.0	0.53	224.85	8,777.79	-961.89	680.59	1,177.91	0.48	0.19	61.34	98.44
	NORMAL	8,986.0	1.04	225.58	8,873.78	-962.81	679.66	1,178.16	0.53	0.53	0.76	1.49
	NORMAL	9,080.0	1.54	215.12	8,967.76	-964.44	678.32	1,178.77	0.59	0.53	-11.13	329.49
8/20/2013	NORMAL	9,175.0	1.76	201.35	9,062.72	-966.85	677.06	1,180.07	0.48	0.23	-14.49	292.02
	NORMAL	9,270.0	1.76	203.49	9,157.67	-969.54	675.94	1,181.69	0.07	0.00	2.25	91.07
8/21/2013	NORMAL	9,365.0	1.94	208.45	9,252.63	-972.29	674.60	1,183.23	0.25	0.19	5.22	44.15
	NORMAL	9,460.0	2.41	210.07	9,347.56	-975.44	672.83	1,184.86	0.50	0.49	1.71	8.26
	NORMAL	9,555.0	2.83	214.48	9,442.46	-979.10	670.50	1,186.61	0.49	0.44	4.64	27.85
	NORMAL	9,651.0	3.02	210.05	9,538.33	-983.24	667.89	1,188.60	0.31	0.20	-4.61	307.82
	NORMAL	9,745.0	3.41	213.34	9,632.19	-987.72	665.12	1,190.78	0.46	0.41	3.50	26.97
	NORMAL	9,839.0	3.61	217.72	9,726.01	-992.40	661.77	1,192.81	0.36	0.21	4.66	55.48
	NORMAL	9,935.0	3.81	213.44	9,821.81	-997.45	658.16	1,195.00	0.36	0.21	-4.46	303.69
	NORMAL	10,022.0	3.82	216.94	9,908.62	-1,002.18	654.83	1,197.08	0.27	0.01	4.02	89.29
	NORMAL	10,079.0	3.82	26.94	9,965.55	-1,002.00	654.55	1,196.77	13.36	0.00	298.35	174.99