

# Deviation Summary

PICEANCE VLY

## 1 General

### 1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

### 1.2 Well/Wellbore Information

Well	PA 24-16	Wellbore No.	00
Wellbore Legal Name	PA 24-16	Common Wellbore Name	PA 24-16
Project	PA 21-06S-095W	Site	PA 22-21 Pad
Vertical Section Azimuth	17.82 (°)	North reference	True
Origin N/S		Origin E/W	
Spud date	4/18/2014	UWI	PA 24-16
Active datum	KB @6,056.0ft (above Mean Sea Level)		

## 2 Survey Name

### 2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	
Date Started	4/18/2014	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 (°)
4/18/2014	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/18/2014	NORMAL	105.0	0.26	346.64	105.00	0.23	-0.06	0.20	0.25	0.25	0.00	346.64
	NORMAL	135.0	0.79	297.33	135.00	0.39	-0.25	0.30	2.17	1.77	-164.37	293.06
	NORMAL	165.0	1.14	275.10	164.99	0.51	-0.74	0.26	1.69	1.17	-74.10	301.60
	NORMAL	196.0	1.41	295.22	195.99	0.70	-1.39	0.25	1.67	0.87	64.90	69.23
	NORMAL	226.0	1.50	275.36	225.98	0.90	-2.11	0.21	1.70	0.30	-66.20	270.09
	NORMAL	257.0	1.76	242.49	256.97	0.72	-2.94	-0.22	3.08	0.84	-106.03	268.70
	NORMAL	287.0	0.44	358.59	286.96	0.62	-3.35	-0.44	6.64	-4.40	387.00	168.56
	NORMAL	347.0	1.32	304.80	346.95	1.24	-3.92	-0.02	1.86	1.47	-89.65	287.70
	NORMAL	378.0	1.41	299.09	377.95	1.63	-4.55	0.16	0.53	0.29	-18.42	300.62
	NORMAL	409.0	2.02	283.27	408.93	1.94	-5.41	0.19	2.47	1.97	-51.03	314.10
	NORMAL	439.0	2.20	284.15	438.91	2.21	-6.49	0.11	0.61	0.60	2.93	10.64
	NORMAL	469.0	2.20	264.38	468.89	2.29	-7.62	-0.15	2.52	0.00	-65.90	260.12
	NORMAL	499.0	1.94	258.84	498.87	2.14	-8.69	-0.63	1.09	-0.87	-18.47	214.84
	NORMAL	530.0	2.02	275.98	529.85	2.09	-9.75	-0.99	1.92	0.26	55.29	90.93
	NORMAL	566.0	2.20	282.54	565.83	2.31	-11.05	-1.19	0.84	0.50	18.22	56.61
	NORMAL	597.0	2.33	282.28	596.80	2.57	-12.25	-1.30	0.42	0.42	-0.84	355.35
	NORMAL	627.0	2.29	305.83	626.78	3.05	-13.33	-1.18	3.14	-0.13	78.50	104.14
	NORMAL	657.0	2.50	325.52	656.75	3.94	-14.19	-0.59	2.82	0.70	65.63	85.65
	NORMAL	687.0	2.42	339.76	686.73	5.07	-14.78	0.31	2.05	-0.27	47.47	104.53
4/19/2014	NORMAL	718.0	2.59	355.05	717.70	6.39	-15.07	1.47	2.22	0.55	49.32	83.45

## 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)	Buld Rate (°/100usft)	Turn (°/100usft)	Tface (°)
4/19/2014	NORMAL	748.0	3.56	357.51	747.65	7.99	-15.16	2.97	3.26	3.23	8.20	8.98
	NORMAL	778.0	4.48	356.10	777.58	10.09	-15.28	4.93	3.08	3.07	-4.70	353.16
	NORMAL	808.0	5.36	355.66	807.47	12.66	-15.47	7.32	2.94	2.93	-1.47	357.33
	NORMAL	838.0	5.98	349.42	837.32	15.59	-15.86	9.99	2.91	2.07	-20.80	312.03
	NORMAL	868.0	6.46	349.86	867.14	18.79	-16.45	12.85	1.61	1.60	1.47	5.89
	NORMAL	959.0	7.69	346.26	957.45	29.74	-18.79	22.56	1.44	1.35	-3.96	338.38
	NORMAL	1,054.0	10.24	346.00	1,051.28	44.11	-22.35	35.16	2.68	2.68	-0.27	358.96
	NORMAL	1,150.0	12.00	349.95	1,145.48	62.22	-26.15	51.23	2.00	1.83	4.11	25.35
	NORMAL	1,245.0	13.06	350.39	1,238.21	82.53	-29.67	69.49	1.12	1.12	0.46	5.36
	NORMAL	1,340.0	14.51	354.35	1,330.48	104.96	-32.63	89.93	1.82	1.53	4.17	34.99
	NORMAL	1,435.0	15.56	0.41	1,422.23	129.54	-33.71	113.01	1.99	1.11	6.38	59.21
	NORMAL	1,531.0	17.10	7.70	1,514.36	156.41	-31.73	139.20	2.67	1.60	7.59	56.62
	NORMAL	1,626.0	18.29	8.76	1,604.87	184.98	-27.59	167.67	1.30	1.25	1.12	15.65
	NORMAL	1,722.0	20.26	9.64	1,695.48	216.26	-22.51	199.00	2.07	2.05	0.92	8.80
	NORMAL	1,817.0	22.24	11.66	1,784.02	250.09	-16.12	233.16	2.22	2.08	2.13	21.24
	NORMAL	1,913.0	24.57	12.89	1,872.12	287.34	-8.00	271.11	2.48	2.43	1.28	12.41
	NORMAL	2,008.0	26.68	14.30	1,957.77	327.27	1.68	312.08	2.31	2.22	1.48	16.76
	NORMAL	2,103.0	30.33	15.00	2,041.24	371.12	13.16	357.34	3.86	3.84	0.74	5.54
	NORMAL	2,198.0	31.25	17.02	2,122.85	417.85	26.58	405.94	1.46	0.97	2.13	49.21
	NORMAL	2,294.0	32.97	17.11	2,204.16	466.63	41.56	456.96	1.79	1.79	0.09	1.63
	NORMAL	2,389.0	34.42	16.05	2,283.20	517.14	56.58	509.65	1.65	1.53	-1.12	337.48
	NORMAL	2,430.0	35.08	16.58	2,316.89	539.57	63.15	533.01	1.77	1.61	1.29	24.81
4/21/2014	NORMAL	2,499.0	35.91	17.02	2,373.06	577.93	74.73	573.07	1.26	1.20	0.64	17.29
	NORMAL	2,594.0	35.65	14.91	2,450.14	631.32	90.01	628.58	1.33	-0.27	-2.22	257.24
	NORMAL	2,689.0	34.81	13.42	2,527.74	684.45	103.43	683.26	1.27	-0.88	-1.57	225.05
	NORMAL	2,784.0	34.33	15.18	2,605.97	736.68	116.73	737.06	1.17	-0.51	1.85	116.39
	NORMAL	2,879.0	33.45	17.11	2,684.83	787.56	131.45	790.00	1.46	-0.93	2.03	130.07
	NORMAL	2,975.0	34.02	16.23	2,764.66	838.63	146.74	843.30	0.78	0.59	-0.92	319.02
	NORMAL	3,070.0	35.12	16.14	2,842.89	890.40	161.77	897.19	1.16	1.16	-0.09	357.30
	NORMAL	3,165.0	35.47	16.05	2,920.43	943.14	176.98	952.05	0.37	0.37	-0.09	351.51
	NORMAL	3,261.0	35.52	16.05	2,998.59	996.70	192.40	1,007.76	0.05	0.05	0.00	0.00
	NORMAL	3,356.0	34.68	15.53	3,076.31	1,049.27	207.26	1,062.35	0.94	-0.88	-0.55	199.38
	NORMAL	3,451.0	34.07	19.13	3,154.73	1,100.45	223.22	1,115.97	2.23	-0.64	3.79	108.19
	NORMAL	3,547.0	33.54	18.60	3,234.50	1,151.00	240.49	1,169.37	0.63	-0.55	-0.55	208.87
	NORMAL	3,642.0	34.81	18.25	3,313.09	1,201.62	257.36	1,222.73	1.35	1.34	-0.37	351.06
	NORMAL	3,737.0	34.46	17.55	3,391.26	1,253.00	273.95	1,276.72	0.56	-0.37	-0.74	228.37
	NORMAL	3,833.0	33.23	17.72	3,470.99	1,303.95	290.15	1,330.19	1.29	-1.28	0.18	175.67
4/22/2014	NORMAL	3,928.0	33.27	16.67	3,550.43	1,353.71	305.55	1,382.27	0.61	0.04	-1.11	273.54
	NORMAL	4,023.0	33.54	17.02	3,629.74	1,403.77	320.70	1,434.57	0.35	0.28	0.37	35.66
	NORMAL	4,119.0	34.33	15.79	3,709.39	1,455.18	335.83	1,488.14	1.09	0.82	-1.28	318.49
	NORMAL	4,214.0	33.36	14.91	3,788.29	1,506.20	349.84	1,541.00	1.14	-1.02	-0.93	206.44
	NORMAL	4,309.0	34.51	15.53	3,867.11	1,557.37	363.77	1,593.98	1.26	1.21	0.65	17.01
	NORMAL	4,405.0	34.24	15.35	3,946.34	1,609.62	378.20	1,648.13	0.30	-0.28	-0.19	200.55
	NORMAL	4,500.0	33.63	16.49	4,025.16	1,660.62	392.74	1,701.13	0.93	-0.64	1.20	134.26
	NORMAL	4,595.0	33.27	19.13	4,104.43	1,710.46	408.75	1,753.49	1.58	-0.38	2.78	104.99
	NORMAL	4,691.0	32.18	20.71	4,185.19	1,759.25	426.42	1,805.35	1.44	-1.14	1.65	142.58
	NORMAL	4,786.0	32.04	24.23	4,265.67	1,805.90	445.71	1,855.66	1.97	-0.15	3.71	95.77
	NORMAL	4,881.0	32.00	26.43	4,346.22	1,851.42	467.26	1,905.59	1.23	-0.04	2.32	92.90
	NORMAL	4,977.0	31.69	25.99	4,427.77	1,896.87	489.63	1,955.70	0.40	-0.32	-0.46	216.64
	NORMAL	5,072.0	31.12	25.63	4,508.85	1,941.43	511.18	2,004.72	0.63	-0.60	-0.38	198.06
	NORMAL	5,168.0	30.37	24.93	4,591.36	1,985.80	532.14	2,053.38	0.87	-0.78	-0.73	205.21
	NORMAL	5,263.0	31.78	25.37	4,672.72	2,030.19	552.98	2,102.01	1.50	1.48	0.46	9.34
	NORMAL	5,359.0	30.90	24.40	4,754.72	2,075.48	574.00	2,151.56	1.06	-0.92	-1.01	209.41
	NORMAL	5,454.0	28.92	25.81	4,837.06	2,118.38	594.08	2,198.55	2.21	-2.08	1.48	161.06
	NORMAL	5,549.0	27.82	24.76	4,920.65	2,159.19	613.37	2,243.30	1.27	-1.16	-1.11	203.94
4/23/2014	NORMAL	5,645.0	26.55	25.81	5,006.04	2,198.85	632.09	2,286.79	1.41	-1.32	1.09	159.77

## 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 (°)
4/23/2014	NORMAL	5,740.0	26.81	26.43	5,090.93	2,237.14	650.87	2,329.00	0.40	0.27	0.65	47.23
	NORMAL	5,835.0	25.36	26.16	5,176.25	2,274.59	669.38	2,370.31	1.53	-1.53	-0.28	184.56
	NORMAL	5,930.0	24.26	24.76	5,262.48	2,310.58	686.52	2,409.81	1.31	-1.16	-1.47	207.47
	NORMAL	6,025.0	23.60	23.88	5,349.32	2,345.69	702.39	2,448.10	0.79	-0.69	-0.93	208.00
	NORMAL	6,120.0	22.02	24.05	5,436.88	2,379.34	717.35	2,484.72	1.66	-1.66	0.18	177.69
	NORMAL	6,216.0	21.10	23.97	5,526.17	2,411.57	731.70	2,519.79	0.96	-0.96	-0.08	181.79
	NORMAL	6,311.0	19.47	22.21	5,615.27	2,441.85	744.64	2,552.58	1.83	-1.72	-1.85	199.70
	NORMAL	6,407.0	18.15	23.44	5,706.14	2,470.38	756.63	2,583.41	1.44	-1.38	1.28	163.86
	NORMAL	6,502.0	17.54	25.11	5,796.57	2,496.92	768.59	2,612.34	0.84	-0.64	1.76	140.80
4/24/2014	NORMAL	6,599.0	18.46	28.54	5,888.83	2,523.65	782.13	2,641.93	1.45	0.95	3.54	50.68
	NORMAL	6,694.0	17.58	30.12	5,979.17	2,549.27	796.52	2,670.72	1.06	-0.93	1.66	151.70
	NORMAL	6,788.0	17.89	27.13	6,068.70	2,574.40	810.23	2,698.84	1.02	0.33	-3.18	287.37
4/25/2014	NORMAL	6,884.0	16.35	26.43	6,160.44	2,599.63	822.97	2,726.75	1.62	-1.60	-0.73	187.29
	NORMAL	6,979.0	15.56	26.16	6,251.78	2,623.04	834.54	2,752.58	0.84	-0.83	-0.28	185.24
	NORMAL	7,075.0	14.51	28.09	6,344.50	2,645.20	845.88	2,777.15	1.21	-1.09	2.01	155.44
	NORMAL	7,170.0	13.14	24.05	6,436.74	2,665.56	855.88	2,799.60	1.76	-1.44	-4.25	213.22
	NORMAL	7,265.0	11.47	20.89	6,529.56	2,684.25	863.65	2,819.77	1.89	-1.76	-3.33	200.42
	NORMAL	7,360.0	9.49	18.87	6,622.97	2,700.49	869.55	2,837.03	2.12	-2.08	-2.13	189.52
	NORMAL	7,456.0	7.78	19.04	6,717.88	2,714.12	874.23	2,851.44	1.78	-1.78	0.18	179.23
	NORMAL	7,551.0	6.24	18.08	6,812.17	2,725.11	877.93	2,863.04	1.63	-1.62	-1.01	183.87
	NORMAL	7,643.0	4.66	20.89	6,903.75	2,733.35	880.82	2,871.77	1.74	-1.72	3.05	171.81
	NORMAL	7,741.0	4.31	21.94	7,001.45	2,740.49	883.61	2,879.42	0.37	-0.36	1.07	167.32
	NORMAL	7,837.0	3.87	23.79	7,097.20	2,746.80	886.27	2,886.24	0.48	-0.46	1.93	164.23
4/26/2014	NORMAL	7,932.0	3.34	20.36	7,192.01	2,752.33	888.52	2,892.19	0.60	-0.56	-3.61	200.44
	NORMAL	8,025.0	2.94	20.10	7,284.87	2,757.11	890.28	2,897.28	0.43	-0.43	-0.28	181.91
	NORMAL	8,121.0	2.37	20.10	7,380.77	2,761.28	891.81	2,901.72	0.59	-0.59	0.00	180.00
	NORMAL	8,216.0	1.63	15.70	7,475.71	2,764.43	892.85	2,905.04	0.79	-0.78	-4.63	189.53
	NORMAL	8,311.0	1.32	69.84	7,570.69	2,766.11	894.25	2,907.06	1.44	-0.33	56.99	128.68
	NORMAL	8,407.0	0.88	90.41	7,666.67	2,766.48	896.02	2,907.96	0.61	-0.46	21.43	148.07
	NORMAL	8,502.0	0.53	135.23	7,761.66	2,766.16	897.06	2,907.98	0.66	-0.37	47.18	143.45
	NORMAL	8,597.0	1.01	184.10	7,856.65	2,765.02	897.31	2,908.96	0.81	0.51	51.44	79.98
	NORMAL	8,692.0	1.36	191.48	7,951.63	2,763.08	897.03	2,905.03	0.40	0.37	7.77	27.28
	NORMAL	8,787.0	1.98	207.13	8,046.59	2,760.51	896.05	2,902.29	0.80	0.65	16.47	44.33
	NORMAL	8,883.0	2.46	221.19	8,142.52	2,757.49	893.94	2,898.76	0.75	0.50	14.65	55.78
4/27/2014	NORMAL	8,978.0	3.25	220.22	8,237.40	2,753.89	890.86	2,894.40	0.83	0.83	-1.02	356.02
	NORMAL	9,073.0	3.78	224.97	8,332.22	2,749.62	886.91	2,889.12	0.64	0.56	5.00	31.17
	NORMAL	9,168.0	3.91	220.49	8,427.01	2,744.94	882.59	2,883.35	0.34	0.14	-4.72	291.15
	NORMAL	9,262.0	4.22	220.14	8,520.77	2,739.86	878.28	2,877.19	0.33	0.33	-0.37	355.25
	NORMAL	9,357.0	4.26	219.87	8,615.51	2,734.48	873.76	2,870.69	0.05	0.04	-0.28	333.34
	NORMAL	9,453.0	4.57	219.61	8,711.23	2,728.80	869.04	2,863.83	0.32	0.32	-0.27	356.18
	NORMAL	9,548.0	4.62	218.99	8,805.92	2,722.91	864.22	2,856.75	0.07	0.05	-0.65	314.88
	NORMAL	9,606.0	4.31	222.25	8,863.75	2,719.48	861.29	2,852.58	0.69	-0.53	5.62	142.31
	NORMAL	9,656.0	4.31	222.25	8,913.61	2,716.70	858.76	2,849.16	0.00	0.00	0.00	0.00