

## 1 General

### 1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

### 1.2 Well/Wellbore Information

Well	PA 314-12	Wellbore No.	00
Wellbore Legal Name	PA 314-12	Common Wellbore Name	PA 314-12
Project	PA 12-07S-095W	Site	PA 23-12 Pad
Vertical Section Azimuth	208.51 (°)	North reference	
Origin N/S		Origin EW	
Spud date	10/2/2013	UWI	PA 314-12
Active datum	KB @6,533.0ft (above Mean Sea Level)		

## 2 Survey Name

### 2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	
Date Started	10/2/2013	Ended	
Tool Name	MWD	Engineer	

#### 2.1.1 Tie On Point

MD (ft)	Inc. (°)	Azl. (°)	TVD (ft)	N/S (ft)	EW (ft)
0.0	0.00	0.00	0.00	0.00	0.00

#### 2.1.2 Survey Stations

Date	Type	MD (ft)	Inc. (°)	Azl. (°)	TVD (ft)	N/S (ft)	EW (ft)	V. sec. (ft)	DLS (°/100usft)	Build Rate (°/100usft)	Turn (°/100usft)	Tface (°)
10/2/2013	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/2/2013	NORMAL	52.0	0.18	280.46	52.00	0.01	-0.08	0.03	0.35	0.35	0.00	280.46
	NORMAL	73.0	0.26	256.38	73.00	0.01	-0.16	0.07	0.57	0.38	-114.67	298.41
	NORMAL	104.0	1.23	221.31	103.99	-0.84	-0.74	0.44	1.18	1.18	0.00	221.31
	NORMAL	165.0	2.38	235.55	164.96	-2.05	-2.21	2.86	2.01	1.89	23.34	28.52
10/3/2013	NORMAL	256.0	4.84	220.08	255.78	-6.05	-6.24	8.30	2.88	2.70	-17.00	330.56
	NORMAL	346.0	10.03	213.40	344.99	-15.51	-13.01	19.84	5.84	5.77	-7.42	347.22
	NORMAL	436.0	12.76	207.60	433.21	-30.88	-21.93	37.59	3.29	3.03	-6.44	334.37
	NORMAL	527.0	14.34	205.22	521.68	-49.97	-31.39	58.89	1.84	1.74	-2.62	339.40
	NORMAL	617.0	16.45	205.66	608.44	-71.54	-41.66	82.74	2.35	2.34	0.49	3.38
	NORMAL	708.0	18.56	207.51	695.22	-96.00	-53.93	110.10	2.40	2.32	2.03	15.66
	NORMAL	779.0	19.70	208.75	762.30	-116.51	-64.90	133.36	1.70	1.61	1.75	20.21
	NORMAL	890.0	22.94	211.45	865.70	-151.38	-85.19	173.69	3.05	2.92	2.43	18.12
	NORMAL	950.0	24.97	211.74	920.52	-172.13	-97.96	198.01	3.39	3.38	0.48	3.45
	NORMAL	1,000.0	24.97	211.74	965.85	-190.08	-109.06	219.08	0.00	0.00	0.00	0.00
10/4/2013	NORMAL	1,074.0	25.27	211.47	1,032.80	-216.96	-125.54	250.45	0.26	0.24	-0.22	338.97
	NORMAL	1,176.0	25.14	206.99	1,125.09	-254.84	-146.74	293.98	1.87	-0.13	-4.39	264.08
	NORMAL	1,266.0	25.58	206.20	1,206.42	-289.31	-164.00	332.50	0.62	0.49	-0.88	322.08
	NORMAL	1,361.0	25.71	205.15	1,292.06	-326.36	-181.81	373.57	0.50	0.14	-1.11	285.49
	NORMAL	1,456.0	25.32	204.27	1,377.80	-363.54	-198.92	414.40	0.57	-0.41	-0.93	223.79
	NORMAL	1,552.0	24.18	205.76	1,464.98	-399.96	-215.90	454.51	1.35	-1.19	1.55	151.99

## 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 (°)
10/4/2013	NORMAL	1,647.0	23.16	209.45	1,551.99	-433.75	-233.54	492.63	1.89	-1.07	3.88	126.23
	NORMAL	1,743.0	23.30	208.57	1,640.21	-466.87	-251.91	530.49	0.39	0.15	-0.92	291.56
	NORMAL	1,839.0	23.39	206.82	1,728.35	-500.55	-269.58	568.52	0.73	0.09	-1.82	276.59
	NORMAL	1,934.0	23.34	207.96	1,815.56	-534.00	-286.92	606.19	0.48	-0.05	1.20	96.83
10/5/2013	NORMAL	2,029.0	24.04	209.72	1,902.56	-567.43	-305.33	644.35	1.05	0.74	1.85	46.10
	NORMAL	2,125.0	24.26	208.75	1,990.16	-601.70	-324.51	683.63	0.47	0.23	-1.01	298.56
	NORMAL	2,221.0	23.82	207.43	2,077.83	-636.20	-342.93	722.73	0.72	-0.46	-1.38	230.11
	NORMAL	2,316.0	23.91	205.94	2,164.71	-670.54	-360.19	761.14	0.64	0.09	-1.57	277.81
	NORMAL	2,412.0	23.56	207.87	2,252.59	-704.99	-377.67	799.76	0.89	-0.36	2.01	115.13
	NORMAL	2,507.0	24.57	209.01	2,339.33	-739.05	-396.12	838.50	1.17	1.06	1.20	25.24
	NORMAL	2,603.0	24.35	208.49	2,426.72	-773.90	-415.24	878.25	0.32	-0.23	-0.54	224.15
	NORMAL	2,698.0	24.40	208.13	2,513.25	-808.42	-433.83	917.46	0.17	0.05	-0.38	288.44
	NORMAL	2,794.0	24.44	207.96	2,600.66	-843.44	-452.49	957.14	0.08	0.04	-0.18	299.57
	NORMAL	2,889.0	24.35	209.63	2,687.18	-877.83	-471.39	996.38	0.73	-0.09	1.76	98.19
	NORMAL	2,984.0	24.26	208.31	2,773.76	-912.03	-490.33	1,035.48	0.58	-0.09	-1.39	259.99
	NORMAL	3,080.0	24.40	207.34	2,861.24	-947.01	-508.79	1,075.02	0.44	0.15	-1.01	288.86
	NORMAL	3,175.0	23.91	210.07	2,947.92	-981.10	-527.45	1,113.89	1.28	-0.52	2.87	114.92
	NORMAL	3,271.0	24.04	209.10	3,035.64	-1,015.03	-546.71	1,152.89	0.43	0.14	-1.01	287.81
	NORMAL	3,367.0	24.22	208.22	3,123.25	-1,049.46	-565.53	1,192.13	0.42	0.19	-0.92	296.18
	NORMAL	3,462.0	24.00	208.05	3,209.96	-1,083.68	-583.83	1,230.94	0.24	-0.23	-0.18	197.44
	NORMAL	3,557.0	23.52	206.64	3,296.91	-1,117.68	-601.41	1,269.20	0.78	-0.51	-1.48	229.16
	NORMAL	3,653.0	22.81	209.19	3,385.17	-1,151.05	-619.08	1,306.96	1.28	-0.74	2.66	126.46
	NORMAL	3,749.0	23.30	209.72	3,473.51	-1,183.78	-637.57	1,344.55	0.55	0.51	0.55	23.20
	NORMAL	3,844.0	24.13	209.10	3,560.48	-1,217.07	-656.32	1,382.75	0.91	0.87	-0.65	342.99
	NORMAL	3,940.0	25.10	209.45	3,647.76	-1,251.94	-675.88	1,422.73	1.02	1.01	0.36	8.71
10/6/2013	NORMAL	4,035.0	24.70	208.84	3,733.93	-1,286.88	-695.36	1,462.73	0.50	-0.42	-0.64	212.43
	NORMAL	4,130.0	24.22	207.17	3,820.40	-1,321.60	-713.83	1,502.06	0.89	-0.51	-1.76	234.47
	NORMAL	4,226.0	23.78	210.25	3,908.11	-1,355.84	-732.58	1,541.09	1.38	-0.46	3.21	110.76
	NORMAL	4,321.0	23.12	208.22	3,995.26	-1,388.82	-751.05	1,578.89	1.10	-0.69	-2.14	229.82
	NORMAL	4,416.0	23.12	210.16	4,082.63	-1,421.38	-769.24	1,616.18	0.80	0.00	2.04	90.89
	NORMAL	4,512.0	23.78	210.60	4,170.70	-1,454.34	-788.56	1,654.36	0.71	0.69	0.46	15.06
	NORMAL	4,607.0	24.26	210.42	4,257.48	-1,487.65	-808.19	1,693.01	0.51	0.51	-0.19	351.24
	NORMAL	4,702.0	24.40	209.01	4,344.04	-1,521.64	-827.59	1,732.14	0.63	0.15	-1.48	282.91
	NORMAL	4,797.0	24.26	208.66	4,430.60	-1,555.93	-846.47	1,771.28	0.21	-0.15	-0.37	225.69
	NORMAL	4,893.0	21.10	208.49	4,519.17	-1,588.43	-864.17	1,808.29	3.29	-3.29	-0.18	181.11
	NORMAL	4,989.0	19.34	207.61	4,609.25	-1,617.71	-879.78	1,841.47	1.86	-1.83	-0.92	189.39
	NORMAL	5,084.0	16.61	210.86	4,699.61	-1,643.31	-894.04	1,870.77	3.06	-2.87	3.42	161.37
	NORMAL	5,178.0	14.90	210.86	4,790.07	-1,665.22	-907.13	1,896.27	1.82	-1.82	0.00	180.00
	NORMAL	5,273.0	13.32	209.45	4,882.20	-1,685.23	-918.78	1,919.42	1.70	-1.66	-1.48	191.59
	NORMAL	5,369.0	11.34	210.68	4,975.98	-1,702.98	-929.03	1,939.91	2.08	-2.06	1.28	173.04
	NORMAL	5,465.0	10.90	212.35	5,070.18	-1,718.77	-938.71	1,958.39	0.57	-0.46	1.74	144.61
	NORMAL	5,560.0	10.42	216.31	5,163.54	-1,733.28	-948.60	1,975.87	0.92	-0.51	4.17	125.17
	NORMAL	5,656.0	9.98	210.42	5,258.03	-1,747.45	-957.95	1,992.78	1.18	-0.46	-6.14	244.25
	NORMAL	5,751.0	9.54	208.49	5,351.65	-1,761.47	-965.88	2,008.88	0.58	-0.46	-2.03	215.69
	NORMAL	5,846.0	7.69	206.11	5,445.58	-1,774.09	-972.43	2,023.11	1.98	-1.95	-2.51	189.73
10/7/2013	NORMAL	5,942.0	6.29	206.11	5,540.86	-1,784.58	-977.57	2,034.78	1.46	-1.46	0.00	180.00
	NORMAL	6,038.0	4.66	203.21	5,636.42	-1,792.89	-981.42	2,043.92	1.72	-1.70	-3.02	188.19
	NORMAL	6,134.0	3.96	211.21	5,732.15	-1,799.31	-984.68	2,051.11	0.96	-0.73	8.33	143.28
	NORMAL	6,230.0	2.99	222.29	5,827.98	-1,804.00	-988.08	2,056.86	1.22	-1.01	11.54	150.75
	NORMAL	6,325.0	0.92	189.06	5,922.92	-1,806.58	-989.87	2,059.98	2.40	-2.18	-34.98	192.80
	NORMAL	6,421.0	1.71	81.66	6,018.90	-1,807.14	-988.57	2,059.85	2.26	0.82	-111.88	228.75
10/8/2013	NORMAL	6,516.0	1.80	89.04	6,113.86	-1,806.91	-985.68	2,058.27	0.26	0.09	7.77	72.00
	NORMAL	6,611.0	1.41	98.36	6,208.82	-1,807.05	-983.03	2,057.13	0.49	-0.41	9.81	150.80
	NORMAL	6,707.0	1.05	109.43	6,304.80	-1,807.52	-981.03	2,056.58	0.45	-0.38	11.53	152.02
	NORMAL	6,802.0	0.88	116.55	6,399.78	-1,808.13	-979.56	2,056.42	0.22	-0.18	7.49	148.33
	NORMAL	6,898.0	0.53	93.79	6,495.78	-1,808.49	-978.45	2,056.21	0.46	-0.36	-23.71	207.66

## 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 (°)
10/8/2013	NORMAL	6,994.0	1.67	50.28	6,591.76	-1,807.63	-976.93	2,054.72	1.39	1.19	-45.32	300.65
	NORMAL	7,089.0	1.71	49.05	6,686.72	-1,805.81	-974.80	2,052.11	0.06	0.04	-1.29	317.18
	NORMAL	7,185.0	2.81	140.28	6,782.67	-1,806.68	-972.21	2,051.64	3.46	1.15	95.03	122.19
	NORMAL	7,280.0	1.32	40.88	6,877.62	-1,807.65	-970.01	2,051.44	3.47	-1.57	-104.63	203.30
	NORMAL	7,374.0	1.10	43.08	6,971.60	-1,806.17	-968.68	2,049.51	0.24	-0.23	2.34	169.17
	NORMAL	7,470.0	0.88	44.13	7,067.59	-1,804.97	-967.54	2,047.91	0.23	-0.23	1.09	176.81
	NORMAL	7,567.0	1.01	2.38	7,164.57	-1,803.15	-966.81	2,045.96	0.54	0.10	-32.87	259.35
	NORMAL	7,660.0	1.05	347.62	7,257.56	-1,802.03	-966.92	2,045.03	0.42	0.06	-23.43	271.15
	NORMAL	7,754.0	1.19	344.19	7,351.54	-1,800.25	-967.37	2,043.68	0.17	0.15	-3.65	332.69
	NORMAL	7,850.0	1.27	333.20	7,447.52	-1,798.34	-968.12	2,042.36	0.26	0.08	-11.45	283.19
10/9/2013	NORMAL	7,945.0	1.45	308.95	7,542.50	-1,796.65	-969.53	2,041.54	0.63	0.19	-25.53	275.00
	NORMAL	8,040.0	1.88	294.44	7,637.46	-1,795.25	-971.88	2,041.43	0.63	0.45	-15.27	308.16
	NORMAL	8,135.0	2.55	285.65	7,732.39	-1,794.03	-975.33	2,042.01	0.79	0.71	-9.25	328.68
	NORMAL	8,260.0	2.94	274.58	7,857.24	-1,793.03	-981.21	2,043.93	0.53	0.31	-8.86	300.73
	NORMAL	8,326.0	3.08	272.73	7,923.15	-1,792.81	-984.67	2,045.39	0.26	0.21	-2.80	324.32
	NORMAL	8,422.0	3.12	275.72	8,019.01	-1,792.42	-989.84	2,047.53	0.17	0.04	3.11	77.60
	NORMAL	8,507.0	3.03	266.93	8,103.89	-1,792.31	-994.39	2,049.60	0.56	-0.11	-10.34	254.83
	NORMAL	8,552.0	3.03	266.93	8,148.83	-1,792.44	-996.76	2,050.84	0.00	0.00	0.00	0.00