

1 General

1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

1.2 Well/Wellbore Information

Well	PA 514-12	Wellbore No.	OH
Wellbore Legal Name	PA 514-12	Common Wellbore Name	PA 514-12
Project	PA 12-07S-095W	Site	PA 23-12 Pad
Vertical Section Azimuth	205.84 (°)	North reference	
Origin N/S		Origin E/W	
Spud date	9/17/2013	UWI	PA 514-12
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	9/17/2013	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 (°)
9/17/2013	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/17/2013	NORMAL	104.0	1.94	201.27	103.98	-1.64	-0.64	1.75	1.87	1.87	0.00	201.27
	NORMAL	165.0	3.26	200.21	164.92	-4.23	-1.61	4.51	2.17	2.16	-1.74	357.38
	NORMAL	256.0	5.10	206.98	255.67	-10.26	-4.34	11.13	2.09	2.02	7.44	18.41
	NORMAL	326.0	7.39	210.42	325.25	-16.92	-8.03	18.73	3.31	3.27	4.91	10.99
	NORMAL	417.0	11.69	199.41	414.98	-30.67	-14.06	33.73	5.11	4.73	-12.10	331.50
	NORMAL	507.0	14.97	204.31	502.55	-49.87	-21.88	54.42	3.85	3.64	5.44	21.40
	NORMAL	597.0	18.11	208.49	588.81	-72.76	-33.34	80.02	3.73	3.49	4.64	22.77
	NORMAL	688.0	20.49	205.06	674.70	-99.62	-46.84	110.08	2.90	2.62	-3.77	332.90
	NORMAL	779.0	23.12	205.57	759.18	-130.17	-61.30	143.88	2.90	2.89	0.56	4.36
	NORMAL	870.0	26.23	206.03	841.86	-164.37	-77.84	181.86	3.42	3.42	0.51	3.74
	NORMAL	962.0	28.85	206.16	923.43	-202.57	-96.55	224.39	2.85	2.85	0.14	1.37
	NORMAL	1,057.0	31.92	206.03	1,005.37	-245.72	-117.68	272.44	3.23	3.23	-0.14	358.72
	NORMAL	1,097.0	32.47	205.83	1,039.22	-264.88	-127.00	293.75	1.40	1.38	-0.50	348.95
	NORMAL	1,147.0	32.47	205.83	1,081.40	-289.04	-138.69	320.59	0.00	0.00	0.00	0.00
9/18/2013	NORMAL	1,176.0	33.23	205.32	1,105.59	-303.54	-145.50	336.33	1.02	0.98	-0.65	339.78
	NORMAL	1,273.0	34.02	204.36	1,186.36	-352.28	-168.06	390.31	0.98	0.81	-0.99	325.66
	NORMAL	1,368.0	32.53	205.59	1,265.78	-399.53	-190.05	442.42	1.72	-1.57	1.29	156.15
	NORMAL	1,463.0	32.28	205.76	1,346.00	-445.40	-212.10	493.32	0.30	-0.28	0.18	161.43
	NORMAL	1,559.0	32.31	205.50	1,427.15	-491.63	-234.28	544.59	0.15	0.05	-0.27	289.69
	NORMAL	1,654.0	33.14	205.24	1,507.07	-538.04	-256.29	595.95	0.89	0.87	-0.27	350.28

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 (°)
9/18/2013	NORMAL	1,750.0	32.04	204.62	1,587.96	-584.93	-278.08	647.65	1.20	-1.15	-0.65	196.63
	NORMAL	1,846.0	32.48	206.55	1,669.14	-631.14	-300.22	698.88	1.17	0.46	2.01	67.69
	NORMAL	1,941.0	32.79	205.85	1,749.14	-677.10	-322.83	750.11	0.51	0.33	-0.74	309.10
	NORMAL	2,036.0	32.22	205.32	1,829.28	-723.15	-344.88	801.16	0.67	-0.60	-0.56	206.33
	NORMAL	2,132.0	32.09	203.48	1,910.54	-769.67	-365.99	852.23	1.03	-0.14	-1.92	261.66
	NORMAL	2,228.0	32.40	208.38	1,991.74	-816.10	-387.58	903.43	1.64	0.32	3.02	79.90
	NORMAL	2,324.0	32.97	204.88	2,072.54	-862.84	-409.99	955.27	1.03	0.59	-1.56	304.50
	NORMAL	2,419.0	31.39	205.76	2,152.94	-908.58	-431.62	1,005.86	1.73	-1.66	0.93	163.85
	NORMAL	2,514.0	31.25	205.76	2,234.10	-953.06	-453.09	1,055.25	0.15	-0.15	0.00	180.00
	NORMAL	2,610.0	31.43	205.68	2,316.09	-998.04	-474.75	1,105.18	0.19	0.19	-0.08	346.95
	NORMAL	2,705.0	31.43	204.44	2,397.15	-1,042.91	-495.74	1,154.71	0.68	0.00	-1.31	269.47
	NORMAL	2,801.0	31.91	206.64	2,478.86	-1,088.38	-517.47	1,205.10	1.30	0.50	2.29	68.37
	NORMAL	2,896.0	32.04	206.64	2,559.45	-1,133.35	-540.03	1,255.40	0.14	0.14	0.00	0.00
	NORMAL	2,991.0	31.78	206.29	2,640.09	-1,178.30	-562.40	1,305.62	0.34	-0.27	-0.37	215.29
	NORMAL	3,087.0	32.44	205.76	2,721.41	-1,224.15	-584.79	1,356.64	0.75	0.69	-0.55	336.66
9/19/2013	NORMAL	3,183.0	33.06	205.59	2,802.15	-1,270.96	-607.29	1,408.58	0.65	0.65	-0.18	351.49
	NORMAL	3,278.0	33.36	205.15	2,881.63	-1,317.98	-629.59	1,460.61	0.41	0.32	-0.46	321.04
	NORMAL	3,374.0	33.01	204.62	2,961.97	-1,365.64	-651.70	1,513.15	0.47	-0.36	-0.55	219.43
	NORMAL	3,469.0	33.67	206.20	3,041.34	-1,412.80	-674.11	1,565.35	1.15	0.69	1.66	53.43
	NORMAL	3,565.0	33.80	205.59	3,121.17	-1,460.76	-697.39	1,618.67	0.38	0.14	-0.64	290.74
	NORMAL	3,660.0	33.27	205.76	3,200.36	-1,508.06	-720.13	1,671.15	0.57	-0.56	0.18	170.02
	NORMAL	3,756.0	32.40	209.45	3,281.03	-1,554.17	-744.22	1,723.15	2.27	-0.91	3.84	115.04
	NORMAL	3,851.0	32.48	208.49	3,361.21	-1,598.76	-768.90	1,774.04	0.55	0.08	-1.01	278.43
	NORMAL	3,947.0	32.53	208.93	3,442.17	-1,644.00	-793.68	1,825.56	0.25	0.05	0.46	78.25
	NORMAL	4,043.0	32.40	206.91	3,523.17	-1,689.53	-817.81	1,877.05	1.14	-0.14	-2.10	262.31
	NORMAL	4,138.0	31.74	208.99	3,603.67	-1,734.49	-840.67	1,927.48	0.70	-0.69	0.08	176.35
	NORMAL	4,233.0	31.03	205.41	3,684.77	-1,778.88	-862.52	1,976.95	1.14	-0.75	-1.66	228.54
	NORMAL	4,329.0	30.55	204.97	3,767.24	-1,823.34	-883.43	2,026.09	0.55	-0.50	-0.46	204.95
	NORMAL	4,423.0	30.46	205.59	3,848.23	-1,866.49	-903.81	2,073.80	0.35	-0.10	0.66	106.23
	NORMAL	4,519.0	29.32	205.06	3,931.46	-1,909.73	-924.28	2,121.64	1.22	-1.19	-0.55	192.81
	NORMAL	4,614.0	27.74	205.76	4,014.92	-1,950.72	-943.74	2,167.01	1.70	-1.66	0.74	168.36
	NORMAL	4,709.0	27.39	203.92	4,099.14	-1,990.60	-962.21	2,210.96	0.97	-0.37	-1.94	246.84
	NORMAL	4,805.0	26.77	204.01	4,184.61	-2,030.54	-979.96	2,254.64	0.65	-0.65	0.09	176.26
	NORMAL	4,900.0	25.50	205.76	4,269.90	-2,068.50	-997.55	2,296.47	1.56	-1.34	1.84	149.53
	NORMAL	4,996.0	24.09	205.85	4,357.05	-2,104.75	-1,015.08	2,336.73	1.47	-1.47	0.09	178.51
	NORMAL	5,091.0	22.68	207.26	4,444.25	-2,138.48	-1,031.92	2,374.43	1.60	-1.48	1.48	159.00
	NORMAL	5,185.0	20.13	205.15	4,531.76	-2,169.23	-1,047.10	2,408.73	2.83	-2.71	-2.24	195.82
	NORMAL	5,280.0	17.63	201.46	4,621.64	-2,197.43	-1,059.31	2,439.43	2.92	-2.63	-3.88	203.79
9/20/2013	NORMAL	5,376.0	15.91	202.51	4,713.55	-2,223.11	-1,069.67	2,467.06	1.82	-1.79	1.09	170.51
	NORMAL	5,472.0	14.77	201.98	4,806.13	-2,246.62	-1,079.29	2,492.41	1.20	-1.19	-0.55	186.76
	NORMAL	5,567.0	12.84	204.71	4,898.39	-2,267.44	-1,088.23	2,515.04	2.14	-2.03	2.87	162.67
	NORMAL	5,663.0	11.43	208.66	4,992.24	-2,285.48	-1,097.25	2,535.21	1.70	-1.47	4.11	151.43
	NORMAL	5,758.0	10.24	210.95	5,085.55	-2,300.98	-1,106.11	2,553.02	1.33	-1.25	2.41	161.23
	NORMAL	5,854.0	8.48	211.47	5,180.26	-2,314.34	-1,114.20	2,568.57	1.84	-1.83	0.54	177.51
	NORMAL	5,950.0	8.44	213.59	5,275.22	-2,326.24	-1,121.79	2,582.59	0.33	-0.04	2.21	98.36
	NORMAL	6,046.0	7.56	215.08	5,370.28	-2,337.28	-1,129.32	2,595.81	0.94	-0.92	1.55	167.48
	NORMAL	6,141.0	6.29	210.68	5,464.59	-2,346.87	-1,135.56	2,607.16	1.45	-1.34	-4.63	200.50
	NORMAL	6,237.0	4.44	211.12	5,560.17	-2,354.57	-1,140.17	2,616.10	1.93	-1.93	0.46	178.95
	NORMAL	6,332.0	3.91	203.48	5,654.91	-2,360.89	-1,143.36	2,623.00	0.81	-0.56	-8.04	222.62
	NORMAL	6,428.0	3.12	207.78	5,750.73	-2,366.01	-1,145.88	2,628.88	0.87	-0.82	4.48	163.68
	NORMAL	6,523.0	1.10	243.47	5,845.67	-2,368.70	-1,147.90	2,632.19	2.44	-2.13	37.57	163.92
	NORMAL	6,619.0	1.19	253.57	5,941.65	-2,369.40	-1,149.68	2,633.59	0.23	0.09	10.52	71.07
9/21/2013	NORMAL	6,714.0	0.44	324.59	6,036.64	-2,369.38	-1,150.84	2,634.08	1.19	-0.79	74.76	158.32
	NORMAL	6,810.0	1.36	12.84	6,132.63	-2,367.97	-1,150.80	2,632.79	1.16	0.96	50.26	65.35
	NORMAL	6,905.0	0.88	336.10	6,227.61	-2,366.20	-1,150.85	2,631.22	0.88	-0.51	-38.67	218.80
	NORMAL	7,001.0	1.14	338.83	6,323.60	-2,364.63	-1,151.49	2,630.09	0.28	0.27	2.84	11.85

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 (°)
9/21/2013	NORMAL	7,096.0	1.10	316.07	6,418.58	-2,363.10	-1,152.46	2,629.13	0.47	-0.04	-23.96	253.55
9/22/2013	NORMAL	7,192.0	1.54	10.82	6,514.56	-2,361.17	-1,152.86	2,627.57	1.33	0.46	57.03	99.53
	NORMAL	7,287.0	1.27	21.19	6,609.53	-2,358.93	-1,152.24	2,625.29	0.39	-0.28	10.92	141.82
	NORMAL	7,382.0	1.27	355.44	6,704.51	-2,356.90	-1,151.94	2,623.33	0.60	0.00	-27.11	257.13
	NORMAL	7,478.0	0.48	97.04	6,800.50	-2,355.89	-1,151.63	2,622.28	1.51	-0.82	105.83	161.01
	NORMAL	7,572.0	0.53	99.59	6,894.50	-2,356.01	-1,150.81	2,622.03	0.06	0.05	2.71	25.48
	NORMAL	7,667.0	0.18	150.30	6,989.49	-2,356.21	-1,150.30	2,622.00	0.46	-0.37	53.38	161.49
	NORMAL	7,761.0	0.48	178.34	7,083.49	-2,356.73	-1,150.22	2,622.43	0.35	0.32	29.83	42.80
	NORMAL	7,857.0	0.66	188.80	7,179.49	-2,357.68	-1,150.29	2,623.31	0.22	0.19	10.90	35.33
	NORMAL	7,952.0	1.10	193.55	7,274.48	-2,359.11	-1,150.59	2,624.73	0.47	0.46	5.00	11.79
	NORMAL	8,047.0	1.45	206.91	7,369.45	-2,361.07	-1,151.34	2,626.82	0.48	0.37	14.06	47.15
	NORMAL	8,142.0	1.85	206.73	7,464.41	-2,363.51	-1,152.58	2,629.56	0.42	0.42	-0.19	359.17
	NORMAL	8,238.0	1.89	213.85	7,560.36	-2,366.21	-1,154.16	2,632.67	0.25	0.04	7.42	83.80
	NORMAL	8,334.0	2.42	220.00	7,656.29	-2,369.08	-1,156.34	2,636.21	0.60	0.55	6.41	26.67
9/23/2013	NORMAL	8,429.0	2.86	229.67	7,751.19	-2,372.15	-1,159.44	2,640.32	0.66	0.46	10.18	50.25
	NORMAL	8,524.0	2.64	230.37	7,846.09	-2,375.07	-1,162.93	2,644.48	0.23	-0.23	0.74	171.67
	NORMAL	8,619.0	2.86	244.43	7,940.98	-2,377.49	-1,166.75	2,648.32	0.74	0.23	14.80	79.04
	NORMAL	8,682.0	2.64	247.25	8,003.90	-2,378.73	-1,169.51	2,650.64	0.41	-0.35	4.48	149.81
	NORMAL	8,727.0	2.64	247.25	8,048.86	-2,379.53	-1,171.42	2,652.19	0.00	0.00	0.00	0.00