

## 1 General

### 1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

### 1.2 Well/Wellbore Information

Well	PA 311-7	Wellbore No.	00
Wellbore Legal Name	PA 311-7	Common Wellbore Name	PA 311-7
Project	PA 06-07S-095W	Site	PA 14-6 Pad
Vertical Section Azimuth	189.45 (°)	North reference	True
Origin N/S		Origin E/W	
Spud date	3/29/2014	UWI	PA 311-7
Active datum	K8 @5,179.0ft (above Mean Sea Level)		

## 2 Survey Name

### 2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	
Date Started	3/29/2014	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 (°)
3/29/2014	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/29/2014	NORMAL	104.0	1.14	187.82	103.99	-1.02	-0.14	1.03	1.10	1.10	0.00	187.82
	NORMAL	135.0	2.20	208.65	134.98	-1.85	-0.47	1.90	3.89	3.42	67.19	40.49
	NORMAL	166.0	2.55	206.10	165.95	-2.99	-1.06	3.13	1.18	1.13	-8.23	341.92
	NORMAL	195.0	2.99	207.69	194.92	-4.24	-1.69	4.46	1.54	1.52	5.48	10.70
	NORMAL	225.0	3.26	203.73	224.88	-5.72	-2.40	6.03	1.15	0.90	-13.20	319.37
	NORMAL	255.0	3.96	206.98	254.82	-7.42	-3.21	7.85	2.43	2.33	10.83	17.92
	NORMAL	285.0	4.22	205.40	284.74	-9.34	-4.16	9.90	0.94	0.87	-5.27	335.78
	NORMAL	315.0	4.31	207.69	314.66	-11.34	-5.15	12.03	0.64	0.30	7.63	63.29
	NORMAL	345.0	4.31	201.53	344.57	-13.38	-6.09	14.20	1.54	0.00	-20.53	266.93
	NORMAL	376.0	5.01	202.15	375.47	-15.72	-7.03	16.66	2.26	2.26	2.00	4.42
	NORMAL	406.0	5.37	203.82	405.35	-18.22	-8.09	19.30	1.30	1.20	5.57	23.60
	NORMAL	436.0	5.98	207.16	435.20	-20.89	-9.37	22.15	2.31	2.03	11.13	30.10
	NORMAL	466.0	6.25	211.29	465.03	-23.68	-10.93	25.15	1.72	0.90	13.77	60.53
	NORMAL	496.0	6.51	206.54	494.84	-26.60	-12.54	28.29	1.96	0.87	-15.83	293.85
	NORMAL	527.0	7.13	206.54	525.62	-29.89	-14.18	31.81	2.00	2.00	0.00	0.00
	NORMAL	557.0	7.74	206.98	555.37	-33.36	-15.93	35.52	2.04	2.03	1.47	5.55
	NORMAL	587.0	8.45	207.51	585.07	-37.11	-17.87	39.54	2.38	2.37	1.77	6.26
	NORMAL	617.0	9.41	206.19	614.71	-41.27	-19.97	43.98	3.27	3.20	-4.40	347.30
	NORMAL	648.0	9.94	204.35	645.27	-45.98	-22.19	49.00	1.98	1.71	-5.94	328.83
3/30/2014	NORMAL	678.0	10.38	204.35	674.80	-50.80	-24.37	54.11	1.47	1.47	0.00	0.00

## 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 (")
3/30/2014	NORMAL	708.0	11.00	201.71	704.28	-55.92	-26.54	59.52	2.63	2.07	-8.80	320.39
	NORMAL	779.0	11.87	195.81	773.87	-69.24	-31.04	73.40	2.05	1.23	-8.31	303.72
	NORMAL	869.0	13.35	192.58	861.70	-88.29	-35.82	92.97	1.82	1.64	-3.59	332.94
	NORMAL	960.0	14.86	188.78	949.95	-110.08	-39.89	115.13	1.95	1.66	-4.18	326.63
3/31/2014	NORMAL	992.0	15.21	188.34	980.86	-118.28	-41.13	123.43	1.15	1.09	-1.38	341.73
	NORMAL	1,058.0	16.00	187.29	1,044.42	-135.87	-43.54	141.18	1.27	1.20	-1.59	339.82
	NORMAL	1,158.0	16.70	187.72	1,140.38	-163.78	-47.22	169.31	0.71	0.70	0.43	10.02
	NORMAL	1,248.0	16.31	185.44	1,226.67	-189.18	-50.15	194.84	0.84	-0.43	-2.53	237.86
	NORMAL	1,344.0	15.43	185.97	1,319.01	-215.30	-52.76	221.04	0.93	-0.92	0.55	170.90
	NORMAL	1,439.0	14.15	187.94	1,410.86	-239.37	-55.68	245.26	1.45	-1.35	2.07	159.50
	NORMAL	1,534.0	14.42	187.02	1,502.93	-262.61	-58.73	268.69	0.37	0.28	-0.97	319.50
	NORMAL	1,628.0	14.86	188.52	1,593.88	-286.15	-61.94	292.44	0.62	0.47	1.60	41.48
	NORMAL	1,724.0	15.08	187.46	1,686.62	-310.71	-65.39	317.22	0.37	0.23	-1.10	308.27
	NORMAL	1,820.0	15.16	187.72	1,779.29	-335.53	-68.70	342.25	0.11	0.08	0.27	40.41
	NORMAL	1,916.0	15.43	186.58	1,871.89	-360.65	-71.85	367.55	0.42	0.28	-1.19	311.37
	NORMAL	2,011.0	14.59	185.26	1,963.65	-385.12	-74.39	392.11	0.95	-0.88	-1.39	201.51
	NORMAL	2,107.0	14.86	187.90	2,056.50	-409.36	-77.19	416.48	0.75	0.28	2.75	69.36
	NORMAL	2,202.0	14.81	189.31	2,148.33	-433.40	-80.83	440.79	0.38	-0.05	1.48	98.57
	NORMAL	2,297.0	15.52	189.66	2,240.03	-457.92	-84.93	465.65	0.75	0.75	0.37	7.52
	NORMAL	2,392.0	15.69	187.81	2,331.52	-483.17	-88.81	491.20	0.55	0.18	-1.95	287.97
	NORMAL	2,488.0	15.30	186.67	2,424.04	-508.61	-92.04	516.82	0.52	-0.41	-1.19	217.44
	NORMAL	2,583.0	14.73	188.78	2,515.79	-533.00	-95.34	541.42	0.83	-0.80	2.22	137.21
	NORMAL	2,678.0	14.59	189.39	2,607.70	-556.74	-99.14	565.46	0.22	-0.15	0.64	132.50
	NORMAL	2,774.0	14.51	187.99	2,700.62	-580.58	-102.78	589.58	0.38	-0.08	-1.46	256.51
	NORMAL	2,869.0	15.16	187.20	2,792.46	-604.69	-105.99	613.88	0.72	0.68	-0.83	342.33
4/1/2014	NORMAL	2,964.0	14.37	188.52	2,884.32	-628.67	-109.30	638.08	0.90	-0.83	1.39	157.57
	NORMAL	3,059.0	14.20	188.60	2,976.38	-651.85	-112.78	661.52	0.18	-0.18	0.08	173.42
	NORMAL	3,154.0	13.54	190.10	3,068.61	-674.32	-116.48	684.29	0.79	-0.69	1.58	152.14
	NORMAL	3,250.0	13.80	190.54	3,161.89	-696.64	-120.54	706.98	0.29	0.27	0.46	22.01
	NORMAL	3,345.0	13.10	189.22	3,254.29	-718.41	-124.34	729.07	0.80	-0.74	-1.39	203.04
	NORMAL	3,441.0	12.48	185.97	3,347.90	-739.46	-127.16	750.31	0.99	-0.65	-3.39	227.67
	NORMAL	3,536.0	11.12	185.88	3,440.90	-758.79	-129.17	769.70	1.43	-1.43	-0.09	180.73
	NORMAL	3,631.0	9.98	186.85	3,534.29	-776.07	-131.09	787.06	1.21	-1.20	1.02	171.62
	NORMAL	3,727.0	9.01	189.92	3,628.97	-791.74	-133.38	802.89	1.14	-1.01	3.20	153.94
	NORMAL	3,822.0	8.22	185.18	3,722.90	-805.83	-135.27	817.10	1.12	-0.83	-4.99	219.62
	NORMAL	3,917.0	7.21	186.49	3,817.04	-818.52	-136.56	829.83	1.08	-1.06	1.38	170.77
	NORMAL	4,013.0	6.07	184.74	3,912.40	-829.56	-137.66	840.90	1.21	-1.19	-1.82	189.20
4/2/2014	NORMAL	4,108.0	5.50	187.90	4,006.91	-839.08	-138.70	850.46	0.69	-0.60	3.33	152.37
	NORMAL	4,204.0	4.70	186.32	4,102.53	-847.54	-139.76	858.99	0.85	-0.83	-1.65	189.17
	NORMAL	4,299.0	3.69	178.41	4,197.28	-854.47	-140.11	865.88	1.22	-1.06	-8.33	205.90
	NORMAL	4,395.0	2.46	163.11	4,293.14	-859.53	-139.42	870.75	1.53	-1.28	-15.94	206.23
	NORMAL	4,490.0	2.59	164.26	4,388.05	-863.54	-138.25	874.52	0.15	0.14	1.21	21.87
	NORMAL	4,584.0	1.10	165.40	4,481.99	-866.46	-137.45	877.27	1.59	-1.59	1.21	179.16
	NORMAL	4,680.0	0.26	6.49	4,577.99	-867.14	-137.19	877.89	1.40	-0.88	-165.53	183.99
	NORMAL	4,775.0	0.61	10.10	4,672.99	-866.42	-137.08	877.17	0.37	0.37	3.80	6.28
	NORMAL	4,870.0	0.44	343.91	4,767.98	-865.58	-137.09	876.34	0.31	-0.18	-27.57	222.07
	NORMAL	4,965.0	0.18	0.78	4,862.98	-865.08	-137.19	875.86	0.29	-0.27	17.76	168.96
	NORMAL	5,061.0	0.57	75.23	4,958.98	-864.80	-136.72	875.52	0.57	0.41	77.55	92.83
	NORMAL	5,156.0	0.48	78.30	5,053.98	-864.60	-135.88	875.18	0.10	-0.09	3.23	164.17
4/3/2014	NORMAL	5,252.0	0.48	91.75	5,149.97	-864.53	-135.08	874.98	0.12	0.00	14.01	96.72
	NORMAL	5,347.0	0.31	174.80	5,244.97	-864.80	-134.66	875.17	0.57	-0.18	87.42	145.18
	NORMAL	5,443.0	0.40	203.28	5,340.97	-865.37	-134.77	875.75	0.20	0.09	29.67	77.70
	NORMAL	5,538.0	1.45	230.26	5,435.96	-866.44	-135.82	876.98	1.17	1.11	28.40	36.40
	NORMAL	5,632.0	1.76	236.59	5,529.92	-868.00	-137.94	878.87	0.38	0.33	6.73	32.96
	NORMAL	5,727.0	2.02	259.80	5,624.87	-869.10	-140.81	880.42	0.84	0.27	24.43	83.08
	NORMAL	5,822.0	0.09	179.55	5,719.85	-869.47	-142.46	881.06	2.11	-2.03	-84.47	182.53

## 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)	Bulld Rate (°/100usft)	Turn (°/100usft)	Tface (°)
4/3/2014	NORMAL	5,917.0	0.18	172.87	5,814.85	-869.69	-142.44	881.27	0.10	0.09	-7.03	346.73
	NORMAL	6,013.0	0.22	254.35	5,910.85	-869.89	-142.60	881.50	0.27	0.04	84.88	124.12
	NORMAL	6,108.0	0.35	205.39	6,005.85	-870.20	-142.90	881.85	0.28	0.14	-51.54	272.13
	NORMAL	6,204.0	0.40	264.45	6,101.85	-870.50	-143.36	882.22	0.39	0.05	61.52	112.82
	NORMAL	6,299.0	0.22	286.25	6,196.85	-870.48	-143.86	882.29	0.22	-0.19	22.95	157.34
	NORMAL	6,394.0	0.61	258.74	6,291.84	-870.53	-144.53	882.44	0.45	0.41	-28.96	318.73
	NORMAL	6,490.0	0.88	260.41	6,387.84	-870.75	-145.76	882.86	0.28	0.28	1.74	5.43
	NORMAL	6,540.0	0.83	274.74	6,437.83	-870.78	-146.50	883.02	0.44	-0.10	28.66	110.26
	NORMAL	6,585.0	0.83	274.74	6,482.83	-870.73	-147.15	883.07	0.00	0.00	0.00	0.00