

1 General

1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

1.2 Well Information

Well	PA 321-11	Wellbore No.	00
Well Name	PA 321-11	Common Name	PA 321-11
Project	PA 11-07S-095W	Site	PA 22-11 Pad
Vertical Section Azimuth	358.62 (°)	North Reference	True
Origin N/S		Origin E/W	
Spud Date	6/5/2013	UWI	PA 321-11
Active Datum	KB @6,295.0ft (above Mean Sea Level)		

2 Survey Name

2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	Scientific Drilling
Date Started	6/5/2013	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 (°/100ft)	Build Rate (°/100ft)	Turn (°/100ft)	TFace (°)
6/5/2013	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/5/2013	NORMAL	75.0	0.09	353.76	75.00	0.06	-0.01	0.06	0.12	0.12	0.00	353.76
	NORMAL	166.0	2.46	6.59	165.97	2.07	0.21	2.06	2.61	2.60	14.10	13.31
6/6/2013	NORMAL	257.0	5.63	3.87	256.73	8.47	0.74	8.44	3.49	3.48	-2.99	355.18
	NORMAL	347.0	8.45	1.23	346.05	19.48	1.18	19.45	3.15	3.13	-2.93	352.14
	NORMAL	438.0	11.00	354.99	435.73	34.82	0.56	34.80	3.03	2.80	-6.86	334.44
	NORMAL	528.0	13.90	359.30	523.61	54.19	-0.32	54.18	3.38	3.22	4.79	19.88
	NORMAL	619.0	17.42	359.38	611.22	78.74	-0.60	78.74	3.87	3.87	0.09	0.39
	NORMAL	691.0	19.75	359.51	679.46	101.69	-0.82	101.68	3.24	3.24	0.18	1.08
	NORMAL	782.0	22.34	357.29	764.38	134.35	-1.77	134.35	2.98	2.85	-2.44	341.85
	NORMAL	874.0	23.74	357.04	849.04	170.31	-3.56	170.34	1.53	1.52	-0.27	355.89
	NORMAL	895.0	24.00	356.80	868.25	178.79	-4.01	178.84	1.32	1.24	-1.14	339.41
6/7/2013	NORMAL	992.0	24.17	357.48	956.80	218.33	-5.99	218.41	0.34	0.18	0.70	58.82
	NORMAL	1,055.0	23.79	356.77	1,014.36	243.90	-7.27	244.00	0.76	-0.60	-1.13	216.89
	NORMAL	1,149.0	23.51	356.79	1,100.47	281.55	-9.39	281.69	0.30	-0.30	0.02	178.37
	NORMAL	1,241.0	23.41	356.46	1,184.86	318.11	-11.54	318.30	0.18	-0.11	-0.36	232.57
	NORMAL	1,336.0	22.95	358.01	1,272.19	355.46	-13.35	355.68	0.80	-0.48	1.63	127.73
	NORMAL	1,430.0	22.77	357.83	1,358.81	391.95	-14.68	392.19	0.21	-0.19	-0.19	201.15
	NORMAL	1,525.0	22.77	358.83	1,446.41	428.70	-15.75	428.96	0.41	0.00	1.05	90.46
	NORMAL	1,619.0	22.74	359.42	1,533.09	465.05	-16.30	465.31	0.24	-0.03	0.63	97.76
	NORMAL	1,713.0	21.98	358.97	1,620.02	500.81	-16.80	501.07	0.83	-0.81	-0.48	192.49

2.1.2 Survey Stations (Continued)

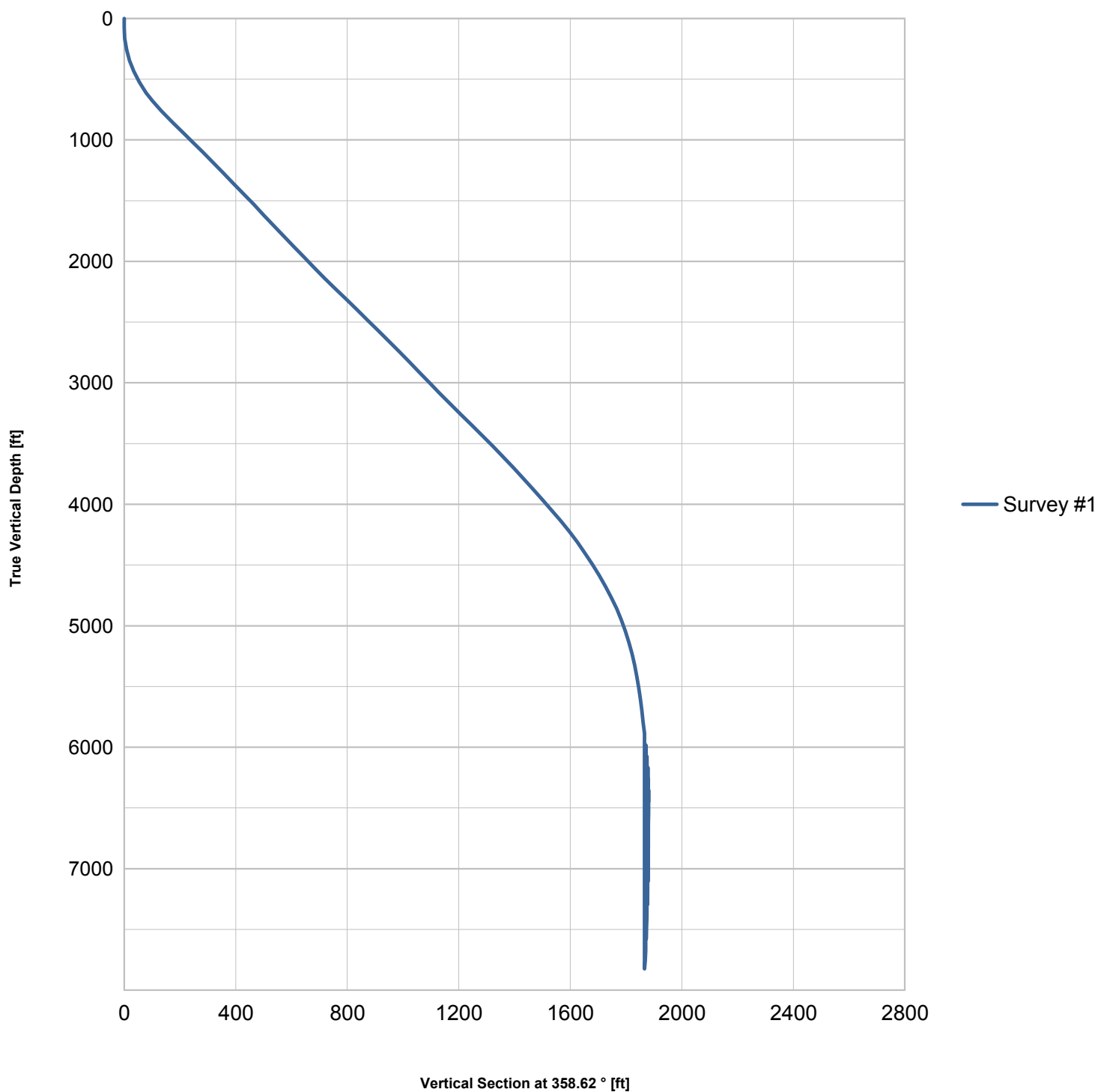
Date	Type	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLS (°/100ft)	Build Rate (°/100ft)	Turn (°/100ft)	TFace (°)
6/7/2013	NORMAL	1,806.0	22.39	0.67	1,706.14	535.92	-16.91	536.18	0.82	0.44	1.83	58.22
	NORMAL	1,901.0	22.80	1.52	1,793.85	572.42	-16.21	572.64	0.55	0.43	0.89	38.93
	NORMAL	1,995.0	23.07	1.10	1,880.42	609.04	-15.37	609.23	0.34	0.29	-0.45	328.58
	NORMAL	2,089.0	22.63	1.96	1,967.04	645.53	-14.40	645.68	0.59	-0.47	0.91	143.20
	NORMAL	2,183.0	23.07	0.26	2,053.66	682.02	-13.70	682.15	0.84	0.47	-1.81	302.90
	NORMAL	2,277.0	23.62	359.46	2,139.97	719.26	-13.79	719.39	0.68	0.59	-0.85	329.67
	NORMAL	2,371.0	24.62	358.01	2,225.76	757.66	-14.65	757.80	1.24	1.06	-1.54	328.69
	NORMAL	2,465.0	23.66	358.11	2,311.54	796.09	-15.95	796.24	1.02	-1.02	0.11	177.61
	NORMAL	2,557.0	24.45	357.92	2,395.55	833.56	-17.25	833.74	0.86	0.86	-0.21	354.31
	NORMAL	2,651.0	23.95	357.47	2,481.29	872.06	-18.80	872.26	0.57	-0.53	-0.48	200.05
	NORMAL	2,746.0	23.17	356.63	2,568.37	909.99	-20.75	910.22	0.89	-0.82	-0.88	202.91
	NORMAL	2,841.0	23.70	356.83	2,655.53	947.71	-22.91	947.98	0.56	0.56	0.21	8.63
	NORMAL	2,935.0	23.55	357.72	2,741.65	985.33	-24.70	985.64	0.41	-0.16	0.95	113.22
	NORMAL	3,028.0	22.68	356.75	2,827.19	1,021.80	-26.45	1,022.14	1.02	-0.94	-1.04	203.19
	NORMAL	3,123.0	23.06	358.32	2,914.72	1,058.68	-28.04	1,059.05	0.76	0.40	1.65	58.81
	NORMAL	3,217.0	22.88	358.09	3,001.27	1,095.35	-29.19	1,095.73	0.21	-0.19	-0.24	206.40
	NORMAL	3,311.0	23.04	359.39	3,087.82	1,132.01	-29.99	1,132.40	0.57	0.17	1.38	73.09
	NORMAL	3,405.0	23.74	0.63	3,174.10	1,169.32	-29.98	1,169.70	0.91	0.74	1.32	35.69
	NORMAL	3,501.0	23.77	359.72	3,261.96	1,207.99	-29.86	1,208.36	0.38	0.03	-0.95	274.26
6/8/2013	NORMAL	3,594.0	23.88	0.06	3,347.04	1,245.56	-29.93	1,245.92	0.19	0.12	0.37	51.46
	NORMAL	3,689.0	23.86	359.01	3,433.91	1,284.00	-30.24	1,284.35	0.45	-0.02	-1.11	266.83
	NORMAL	3,783.0	22.99	359.12	3,520.16	1,321.36	-30.85	1,321.72	0.93	-0.93	0.12	177.17
	NORMAL	3,877.0	22.60	359.24	3,606.82	1,357.78	-31.38	1,358.14	0.42	-0.41	0.13	173.26
	NORMAL	3,972.0	22.35	358.04	3,694.61	1,394.08	-32.24	1,394.45	0.55	-0.26	-1.26	240.86
	NORMAL	4,068.0	21.03	358.00	3,783.81	1,429.54	-33.46	1,429.93	1.38	-1.38	-0.04	180.62
	NORMAL	4,162.0	21.64	0.05	3,871.37	1,463.73	-34.03	1,464.12	1.02	0.65	2.18	51.68
	NORMAL	4,256.0	21.47	0.75	3,958.79	1,498.26	-33.79	1,498.64	0.33	-0.18	0.74	123.79
	NORMAL	4,351.0	20.38	359.25	4,047.53	1,532.19	-33.78	1,532.56	1.28	-1.15	-1.58	205.47
	NORMAL	4,445.0	20.43	359.72	4,135.63	1,564.96	-34.08	1,565.33	0.18	0.05	0.50	73.25
	NORMAL	4,540.0	18.64	357.66	4,225.16	1,596.71	-34.78	1,597.09	2.02	-1.88	-2.17	200.08
	NORMAL	4,633.0	16.89	359.38	4,313.72	1,625.07	-35.53	1,625.46	1.96	-1.88	1.85	164.12
	NORMAL	4,728.0	16.81	358.35	4,404.64	1,652.60	-36.08	1,652.99	0.33	-0.08	-1.08	254.51
	NORMAL	4,821.0	15.33	358.65	4,494.01	1,678.34	-36.75	1,678.74	1.59	-1.59	0.32	176.93
	NORMAL	4,916.0	15.12	358.78	4,585.67	1,703.28	-37.31	1,703.68	0.22	-0.22	0.14	170.83
	NORMAL	5,009.0	13.11	358.18	4,675.86	1,725.95	-37.91	1,726.36	2.17	-2.16	-0.65	183.87
	NORMAL	5,102.0	12.30	356.68	4,766.58	1,746.38	-38.81	1,746.81	0.94	-0.87	-1.61	201.43
	NORMAL	5,196.0	11.58	355.74	4,858.55	1,765.79	-40.10	1,766.24	0.79	-0.77	-1.00	194.66
	NORMAL	5,291.0	9.13	359.78	4,951.99	1,782.83	-40.83	1,783.30	2.69	-2.58	4.25	165.47
	NORMAL	5,384.0	8.20	359.13	5,043.93	1,796.84	-40.96	1,797.31	1.01	-1.00	-0.70	185.69
	NORMAL	5,479.0	8.03	0.15	5,137.98	1,810.25	-41.05	1,810.72	0.23	-0.18	1.07	140.24
	NORMAL	5,573.0	5.44	355.02	5,231.32	1,821.26	-41.42	1,821.73	2.83	-2.76	-5.46	190.54
6/9/2013	NORMAL	5,668.0	5.72	359.71	5,325.88	1,830.48	-41.83	1,830.96	0.56	0.29	4.94	60.80
	NORMAL	5,762.0	4.31	358.10	5,419.51	1,838.70	-41.97	1,839.17	1.51	-1.50	-1.71	184.90
	NORMAL	5,855.0	4.24	16.86	5,512.26	1,845.48	-41.09	1,845.93	1.50	-0.08	20.17	102.19
	NORMAL	5,949.0	3.09	20.76	5,606.07	1,851.17	-39.19	1,851.58	1.25	-1.22	4.15	169.71
	NORMAL	6,042.0	3.42	19.95	5,698.91	1,856.13	-37.35	1,856.49	0.36	0.35	-0.87	351.66
	NORMAL	6,136.0	2.97	7.00	5,792.77	1,861.18	-36.10	1,861.51	0.90	-0.48	-13.78	231.70
	NORMAL	6,229.0	2.94	5.94	5,885.65	1,865.94	-35.56	1,866.26	0.07	-0.03	-1.14	240.70
6/10/2013	NORMAL	6,323.0	2.50	6.64	5,979.54	1,870.38	-35.07	1,870.68	0.47	-0.47	0.74	176.03
	NORMAL	6,417.0	2.80	1.14	6,073.44	1,874.71	-34.79	1,875.00	0.42	0.32	-5.85	316.95
	NORMAL	6,511.0	1.25	34.96	6,167.38	1,877.84	-34.15	1,878.12	2.01	-1.65	35.98	158.44
	NORMAL	6,604.0	1.15	335.15	6,260.36	1,879.52	-33.97	1,879.79	1.29	-0.11	-64.31	235.96
	NORMAL	6,698.0	0.26	335.07	6,354.36	1,880.57	-34.45	1,880.86	0.95	-0.95	-0.09	180.02
	NORMAL	6,793.0	0.34	108.89	6,449.36	1,880.68	-34.28	1,880.96	0.58	0.08	140.86	153.66
	NORMAL	6,887.0	0.27	201.31	6,543.35	1,880.38	-34.09	1,880.65	0.47	-0.07	98.32	142.49
	NORMAL	6,982.0	0.33	231.68	6,638.35	1,880.00	-34.39	1,880.28	0.18	0.06	31.97	84.96
	NORMAL	7,076.0	0.59	262.04	6,732.35	1,879.77	-35.08	1,880.07	0.37	0.28	32.30	59.01

2.1.2 Survey Stations (Continued)

Date	Type	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLS (°/100ft)	Build Rate (°/100ft)	Turn (°/100ft)	TFace (°)
6/10/2013	NORMAL	7,170.0	1.06	266.25	6,826.34	1,879.64	-36.43	1,879.97	0.50	0.50	4.48	9.46
	NORMAL	7,264.0	2.20	248.67	6,920.30	1,878.93	-38.98	1,879.32	1.31	1.21	-18.70	327.36
	NORMAL	7,358.0	0.82	266.44	7,014.27	1,878.23	-41.33	1,878.68	1.53	-1.47	18.90	170.00
	NORMAL	7,452.0	0.81	247.90	7,108.26	1,877.94	-42.61	1,878.42	0.28	-0.01	-19.72	258.58
	NORMAL	7,546.0	1.02	219.17	7,202.25	1,877.04	-43.76	1,877.55	0.53	0.22	-30.56	279.77
	NORMAL	7,641.0	1.93	244.36	7,297.21	1,875.69	-45.73	1,876.25	1.15	0.96	26.52	48.51
	NORMAL	7,735.0	1.94	237.94	7,391.16	1,874.16	-48.51	1,874.79	0.23	0.01	-6.83	269.43
	NORMAL	7,829.0	1.47	239.74	7,485.12	1,872.71	-50.90	1,873.39	0.50	-0.50	1.91	174.40
	NORMAL	7,923.0	1.91	243.92	7,579.08	1,871.41	-53.35	1,872.16	0.49	0.47	4.45	17.75
	NORMAL	8,016.0	2.11	233.29	7,672.02	1,869.71	-56.11	1,870.52	0.45	0.22	-11.43	292.83
6/11/2013	NORMAL	8,103.0	3.18	240.17	7,758.93	1,867.55	-59.49	1,868.44	1.28	1.23	7.91	19.98
	NORMAL	8,168.0	3.98	245.31	7,823.80	1,865.71	-63.10	1,866.69	1.32	1.23	7.91	24.44

3 Charts

3.1 Vertical Section View



3.2 Plan View

