

1 General

1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

1.2 Well Information

Well	PA 511-11	Wellbore No.	1
Well Name	PA 511-11	Common Name	PA 511-11
Project	PA 11-07S-095W	Site	PA 22-11 Pad
Vertical Section Azimuth	311.75 (°)	North Reference	True
Origin N/S		Origin E/W	
Spud Date	3/27/2013	UWI	PA 511-11
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	3/27/2013	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 (°)
3/27/2013	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/27/2013	NORMAL	75.0	0.26	99.49	75.00	-0.03	0.17	-0.14	0.35	0.35	0.00	99.49
	NORMAL	166.0	2.46	326.34	165.97	1.56	-0.71	1.57	2.91	2.42	-146.32	222.74
	NORMAL	257.0	4.40	314.12	256.81	5.62	-4.30	6.95	2.27	2.13	-13.43	333.18
	NORMAL	347.0	6.51	311.92	346.39	11.43	-10.58	15.50	2.36	2.34	-2.44	353.24
	NORMAL	438.0	9.68	310.43	436.48	19.84	-20.24	28.31	3.49	3.48	-1.64	355.47
	NORMAL	528.0	12.84	310.52	524.73	31.25	-33.60	45.88	3.51	3.51	0.10	0.36
	NORMAL	619.0	15.84	310.96	612.89	45.96	-50.67	68.41	3.30	3.30	0.48	2.29
3/28/2013	NORMAL	75.0	0.26	99.49	75.00	-0.03	0.17	-0.14	0.35	0.35	0.00	99.49
	NORMAL	166.0	2.46	326.34	165.97	1.56	-0.71	1.57	2.91	2.42	-146.32	222.74
	NORMAL	257.0	4.40	314.12	256.81	5.62	-4.30	6.95	2.27	2.13	-13.43	333.18
	NORMAL	347.0	6.51	311.92	346.39	11.43	-10.58	15.50	0.00	0.00	0.00	0.00
	NORMAL	438.0	9.68	310.43	436.48	19.84	-20.24	28.31	0.00	0.00	0.00	0.00
	NORMAL	528.0	12.84	310.52	524.73	31.25	-33.60	45.88	0.00	0.00	0.00	0.00
	NORMAL	619.0	15.84	310.96	612.89	45.96	-50.67	68.41	0.00	0.00	0.00	0.00
	NORMAL	691.0	17.54	312.34	681.85	59.71	-66.12	89.09	2.42	2.36	1.92	13.79
	NORMAL	782.0	20.75	310.49	767.81	79.42	-88.52	118.92	3.59	3.53	-2.03	348.42
	NORMAL	874.0	23.98	311.83	852.88	102.48	-114.85	153.92	3.55	3.51	1.46	9.59
	NORMAL	980.0	25.59	312.18	949.11	132.22	-147.86	198.36	1.53	1.52	0.33	5.37
3/29/2013	NORMAL	1,055.0	25.14	312.45	1,016.88	153.85	-171.62	230.48	0.62	-0.60	0.36	165.71
	NORMAL	1,150.0	24.98	311.20	1,102.94	180.68	-201.61	270.72	0.58	-0.17	-1.32	252.62

2.1.2 Survey Stations (Continued)

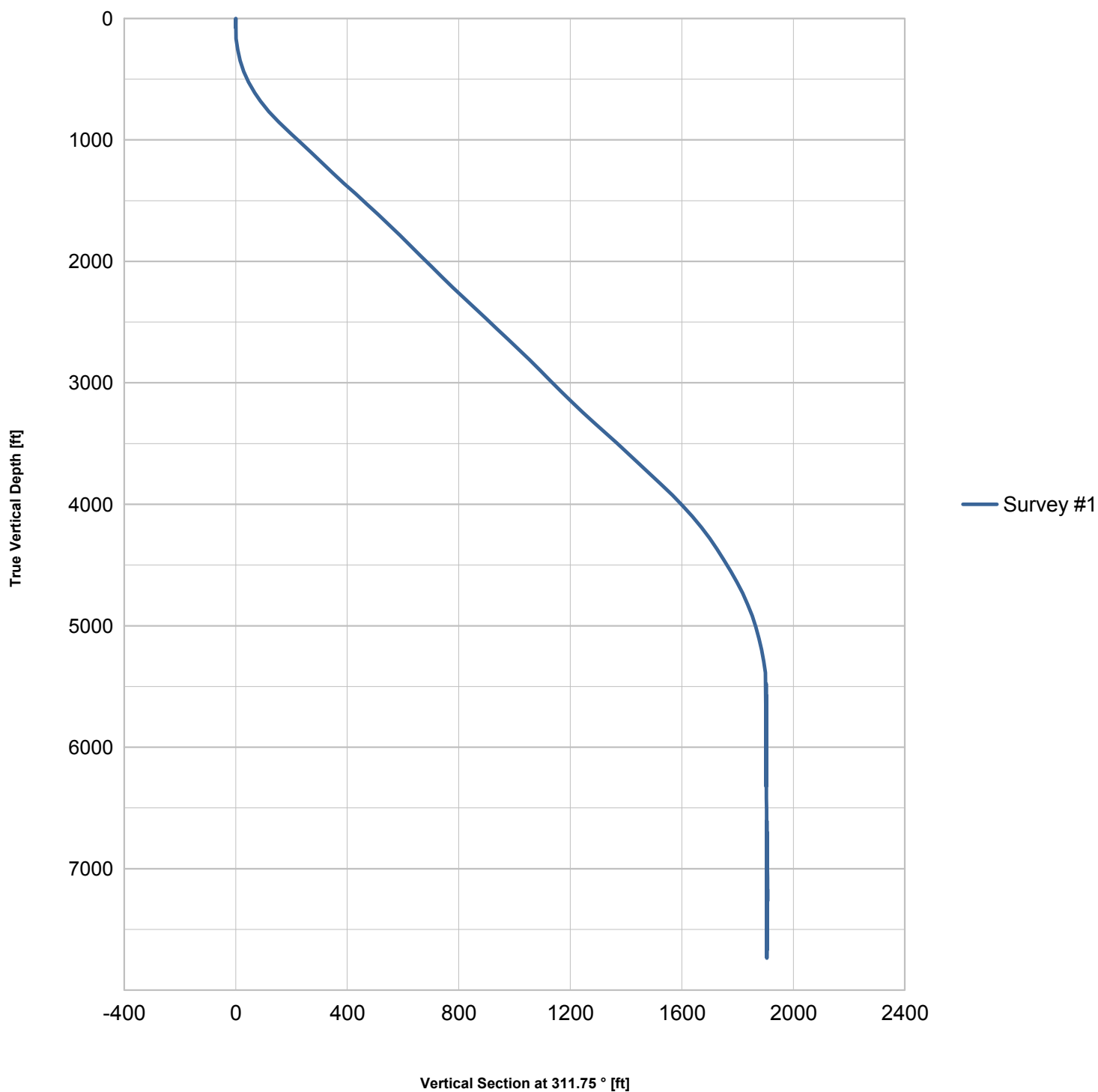
Date	Type	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLS (°/100ft)	Build Rate (°/100ft)	Turn (°/100ft)	TFace (°)
3/29/2013	NORMAL	1,243.0	24.76	310.68	1,187.31	206.31	-231.15	309.83	0.33	-0.24	-0.56	224.59
	NORMAL	1,337.0	24.01	311.05	1,272.93	231.70	-260.50	348.63	0.81	-0.80	0.39	168.66
	NORMAL	1,432.0	25.96	312.40	1,359.03	258.42	-290.43	388.75	2.14	2.05	1.42	16.91
	NORMAL	1,527.0	25.85	312.19	1,444.49	286.35	-321.13	430.26	0.15	-0.12	-0.22	219.74
	NORMAL	1,620.0	25.15	310.87	1,528.43	312.89	-351.10	470.29	0.97	-0.75	-1.42	218.48
	NORMAL	1,714.0	25.27	310.99	1,613.48	339.12	-381.35	510.32	0.14	0.13	0.13	23.13
	NORMAL	1,808.0	24.33	310.03	1,698.81	364.74	-411.32	549.74	1.09	-1.00	-1.02	202.75
	NORMAL	1,902.0	24.01	314.29	1,784.57	390.55	-439.84	588.21	1.89	-0.34	4.53	102.33
	NORMAL	1,996.0	23.39	314.48	1,870.64	416.98	-466.84	625.95	0.66	-0.66	0.20	173.06
	NORMAL	2,090.0	24.27	314.30	1,956.63	443.54	-493.98	663.89	0.94	0.94	-0.19	355.19
	NORMAL	2,184.0	23.39	313.86	2,042.61	469.97	-521.26	701.83	0.96	-0.94	-0.47	191.22
	NORMAL	2,278.0	24.09	313.42	2,128.66	496.08	-548.65	739.65	0.77	0.74	-0.47	345.60
	NORMAL	2,372.0	25.01	312.56	2,214.16	522.71	-577.22	778.70	1.05	0.98	-0.91	338.38
	NORMAL	2,466.0	24.75	311.66	2,299.44	549.23	-606.56	818.25	0.49	-0.28	-0.96	235.12
	NORMAL	2,559.0	24.85	311.76	2,383.86	575.18	-635.68	857.25	0.12	0.11	0.11	22.80
	NORMAL	2,653.0	24.96	310.50	2,469.12	601.22	-665.49	896.84	0.58	0.12	-1.34	281.14
	NORMAL	2,747.0	25.31	309.62	2,554.22	626.91	-696.05	936.74	0.54	0.37	-0.94	312.72
	NORMAL	2,842.0	24.47	309.27	2,640.40	652.31	-726.93	976.69	0.90	-0.88	-0.37	189.79
	NORMAL	2,936.0	24.59	307.71	2,725.91	676.60	-757.47	1,015.65	0.70	0.13	-1.66	279.79
	NORMAL	3,029.0	23.88	309.50	2,810.72	700.41	-787.31	1,053.77	1.10	-0.76	1.92	134.83
	NORMAL	3,124.0	23.26	311.85	2,897.79	725.16	-816.12	1,091.74	1.18	-0.65	2.47	124.49
	NORMAL	3,219.0	23.65	312.54	2,984.94	750.56	-844.13	1,129.55	0.50	0.41	0.73	35.47
	NORMAL	3,313.0	23.84	312.76	3,070.99	776.20	-871.97	1,167.40	0.22	0.20	0.23	25.10
3/30/2013	NORMAL	3,406.0	23.92	313.49	3,156.02	801.94	-899.45	1,205.03	0.33	0.09	0.78	75.19
	NORMAL	3,502.0	25.18	313.27	3,243.34	829.33	-928.44	1,244.90	1.32	1.31	-0.23	355.75
	NORMAL	3,595.0	25.97	310.93	3,327.23	856.23	-958.23	1,285.04	1.38	0.85	-2.52	306.97
	NORMAL	3,690.0	25.83	311.18	3,412.69	883.49	-989.52	1,326.53	0.19	-0.15	0.26	142.16
	NORMAL	3,784.0	25.24	310.78	3,497.51	910.06	-1,020.11	1,367.05	0.65	-0.63	-0.43	196.11
	NORMAL	3,879.0	25.16	313.57	3,583.47	937.21	-1,050.08	1,407.49	1.25	-0.08	2.94	95.11
	NORMAL	3,973.0	25.27	313.33	3,668.51	964.75	-1,079.15	1,447.52	0.16	0.12	-0.26	316.98
	NORMAL	4,069.0	25.27	312.83	3,755.33	992.74	-1,109.08	1,488.49	0.22	0.00	-0.52	269.77
	NORMAL	4,163.0	24.77	312.33	3,840.51	1,019.64	-1,138.35	1,528.24	0.58	-0.53	-0.53	202.70
	NORMAL	4,257.0	23.72	311.47	3,926.22	1,045.42	-1,167.08	1,566.84	1.18	-1.12	-0.91	198.20
	NORMAL	4,352.0	22.16	311.84	4,013.70	1,070.03	-1,194.75	1,603.86	1.65	-1.64	0.39	174.89
	NORMAL	4,446.0	20.86	312.06	4,101.15	1,093.07	-1,220.38	1,638.33	1.39	-1.38	0.23	176.55
	NORMAL	4,541.0	19.09	313.17	4,190.43	1,115.03	-1,244.27	1,670.77	1.91	-1.86	1.17	168.43
	NORMAL	4,634.0	17.24	313.51	4,278.79	1,134.92	-1,265.36	1,699.75	1.99	-1.99	0.37	176.88
	NORMAL	4,729.0	15.21	313.42	4,370.01	1,153.18	-1,284.62	1,726.29	2.14	-2.14	-0.09	180.67
	NORMAL	4,823.0	15.39	313.24	4,460.67	1,170.20	-1,302.67	1,751.08	0.20	0.19	-0.19	345.13
	NORMAL	4,917.0	14.68	312.72	4,551.46	1,186.83	-1,320.50	1,775.46	0.77	-0.76	-0.55	190.51
	NORMAL	5,010.0	13.39	313.23	4,641.68	1,202.20	-1,337.01	1,798.01	1.39	-1.39	0.55	174.77
	NORMAL	5,103.0	12.05	315.97	4,732.39	1,216.55	-1,351.60	1,818.45	1.58	-1.44	2.95	157.09
	NORMAL	5,198.0	10.18	316.52	4,825.61	1,229.78	-1,364.27	1,836.71	1.97	-1.97	0.58	177.02
	NORMAL	5,292.0	8.90	313.29	4,918.31	1,240.79	-1,375.28	1,852.26	1.48	-1.36	-3.44	201.11
	NORMAL	5,385.0	7.41	313.58	5,010.36	1,249.86	-1,384.86	1,865.44	1.60	-1.60	0.31	178.56
3/31/2013	NORMAL	5,480.0	6.32	314.62	5,104.68	1,257.75	-1,393.02	1,876.79	1.15	-1.15	1.09	174.01
	NORMAL	5,574.0	5.00	307.58	5,198.22	1,263.89	-1,399.95	1,886.04	1.58	-1.40	-7.49	204.27
	NORMAL	5,669.0	4.27	304.86	5,292.91	1,268.43	-1,406.13	1,893.68	0.80	-0.77	-2.86	195.40
	NORMAL	5,763.0	2.81	317.20	5,386.73	1,272.12	-1,410.57	1,899.45	1.74	-1.55	13.13	158.51
	NORMAL	5,856.0	1.02	335.22	5,479.67	1,274.55	-1,412.47	1,902.48	2.01	-1.92	19.38	170.27
	NORMAL	5,950.0	0.23	134.30	5,573.67	1,275.18	-1,412.68	1,903.06	1.32	-0.84	169.23	176.19
	NORMAL	6,043.0	0.45	168.73	5,666.67	1,274.69	-1,412.48	1,902.58	0.31	0.24	37.02	60.98
	NORMAL	6,137.0	0.35	45.08	5,760.67	1,274.53	-1,412.20	1,902.27	0.75	-0.11	-131.54	204.35
	NORMAL	6,230.0	1.06	45.00	5,853.66	1,275.34	-1,411.39	1,902.20	0.76	0.76	-0.09	359.88
	NORMAL	6,324.0	1.15	42.62	5,947.64	1,276.65	-1,410.14	1,902.14	0.11	0.10	-2.53	331.79
	NORMAL	6,418.0	0.81	37.04	6,041.63	1,277.87	-1,409.10	1,902.18	0.38	-0.36	-5.94	192.90
	NORMAL	6,512.0	0.52	32.90	6,135.62	1,278.76	-1,408.47	1,902.30	0.31	-0.31	-4.40	187.34

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 (°)
4/1/2013	NORMAL	6,605.0	0.21	353.26	6,228.62	1,279.28	-1,408.26	1,902.49	0.41	-0.33	-42.62	200.50
	NORMAL	6,700.0	0.34	330.01	6,323.62	1,279.70	-1,408.42	1,902.89	0.18	0.14	-24.47	307.34
	NORMAL	6,794.0	0.62	296.02	6,417.62	1,280.16	-1,409.02	1,903.65	0.41	0.30	-36.16	296.67
	NORMAL	6,888.0	0.53	285.65	6,511.61	1,280.50	-1,409.89	1,904.53	0.15	-0.10	-11.03	224.04
	NORMAL	6,983.0	0.35	251.58	6,606.61	1,280.53	-1,410.59	1,905.07	0.33	-0.19	-35.86	219.24
	NORMAL	7,077.0	0.69	263.86	6,700.60	1,280.38	-1,411.43	1,905.59	0.38	0.36	13.06	24.35
	NORMAL	7,171.0	0.33	333.46	6,794.60	1,280.56	-1,412.11	1,906.22	0.69	-0.38	74.04	151.72
	NORMAL	7,265.0	0.56	5.51	6,888.60	1,281.26	-1,412.19	1,906.74	0.35	0.24	34.10	64.04
	NORMAL	7,359.0	0.51	222.26	6,982.60	1,281.41	-1,412.42	1,907.02	1.08	-0.05	-152.39	197.49
	NORMAL	7,454.0	0.67	251.51	7,077.59	1,280.92	-1,413.24	1,907.30	0.35	0.17	30.79	77.17
	NORMAL	7,547.0	0.35	309.12	7,170.59	1,280.93	-1,413.97	1,907.85	0.61	-0.34	61.95	148.51
	NORMAL	7,642.0	1.14	191.65	7,265.58	1,280.18	-1,414.39	1,907.67	1.41	0.83	-123.65	229.11
	NORMAL	7,736.0	1.47	191.88	7,359.56	1,278.09	-1,414.83	1,906.60	0.35	0.35	0.24	1.02
	NORMAL	7,830.0	1.48	203.98	7,453.53	1,275.80	-1,415.57	1,905.63	0.33	0.01	12.87	94.22
	NORMAL	7,924.0	1.67	210.06	7,547.49	1,273.51	-1,416.75	1,904.98	0.27	0.20	6.47	44.40
	NORMAL	8,017.0	1.41	229.05	7,640.46	1,271.58	-1,418.29	1,904.85	0.61	-0.28	20.42	126.28
	NORMAL	8,048.0	1.41	230.28	7,671.45	1,271.09	-1,418.87	1,904.95	0.10	0.00	3.97	90.61
	NORMAL	8,113.0	1.41	232.86	7,736.43	1,270.09	-1,420.12	1,905.23	0.10	0.00	3.97	91.29

3 Charts

3.1 Vertical Section View



3.2 Plan View

