

1 General

1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

1.2 Well Information

Well	PA 412-11	Wellbore No.	1
Well Name	PA 412-11	Common Name	PA 412-11
Project	PA 11-07S-095W	Site	PA 22-11 Pad
Vertical Section Azimuth	283.49 (°)	North Reference	True
Origin N/S		Origin E/W	
Spud Date	4/30/2013	UWI	PA 412-11
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	4/30/2013	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 (°)
4/30/2013	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/30/2013	NORMAL	104.0	0.18	109.86	104.00	-0.06	0.15	-0.16	0.17	0.17	0.00	109.86
	NORMAL	165.0	1.14	305.07	165.00	0.26	-0.25	0.31	2.15	1.57	-270.15	193.15
	NORMAL	256.0	3.08	288.37	255.93	1.55	-3.31	3.58	2.21	2.13	-18.35	333.95
	NORMAL	346.0	4.40	285.21	345.74	3.22	-8.94	9.44	1.48	1.47	-3.51	349.55
5/1/2013	NORMAL	437.0	6.42	283.10	436.33	5.29	-17.27	18.02	2.23	2.22	-2.32	353.32
	NORMAL	527.0	8.53	284.50	525.56	8.10	-28.63	29.73	2.35	2.34	1.56	5.63
	NORMAL	618.0	11.00	282.92	615.23	11.73	-43.63	45.16	2.73	2.71	-1.74	353.03
	NORMAL	708.0	13.11	281.69	703.24	15.72	-61.99	63.95	2.36	2.34	-1.37	352.46
	NORMAL	799.0	15.13	281.87	791.49	20.25	-83.72	86.14	2.22	2.22	0.20	1.33
	NORMAL	873.0	16.36	284.13	862.71	24.79	-103.28	106.22	1.86	1.66	3.05	27.59
	NORMAL	964.0	17.85	283.87	949.68	31.26	-129.25	132.98	1.64	1.64	-0.29	356.94
	NORMAL	1,057.0	19.08	282.64	1,037.89	38.00	-157.92	162.43	1.39	1.32	-1.32	341.84
5/2/2013	NORMAL	1,152.0	18.25	282.85	1,127.90	44.71	-187.58	192.83	0.88	-0.87	0.22	175.47
	NORMAL	1,242.0	18.25	283.38	1,213.37	51.10	-215.03	221.02	0.18	0.00	0.59	90.25
	NORMAL	1,337.0	18.19	282.87	1,303.61	57.85	-243.95	250.72	0.18	-0.06	-0.54	249.14
	NORMAL	1,431.0	18.28	282.41	1,392.89	64.28	-272.66	280.13	0.18	0.10	-0.49	301.80
	NORMAL	1,526.0	18.17	282.66	1,483.12	70.73	-301.66	309.84	0.14	-0.12	0.26	144.71
	NORMAL	1,619.0	17.90	281.44	1,571.55	76.74	-329.81	338.62	0.50	-0.29	-1.31	233.86
	NORMAL	1,713.0	18.55	284.61	1,660.84	83.38	-358.44	368.00	1.26	0.69	3.37	58.26
	NORMAL	1,807.0	18.49	284.28	1,749.97	90.83	-387.36	397.86	0.13	-0.06	-0.35	240.06

2.1.2 Survey Stations (Continued)

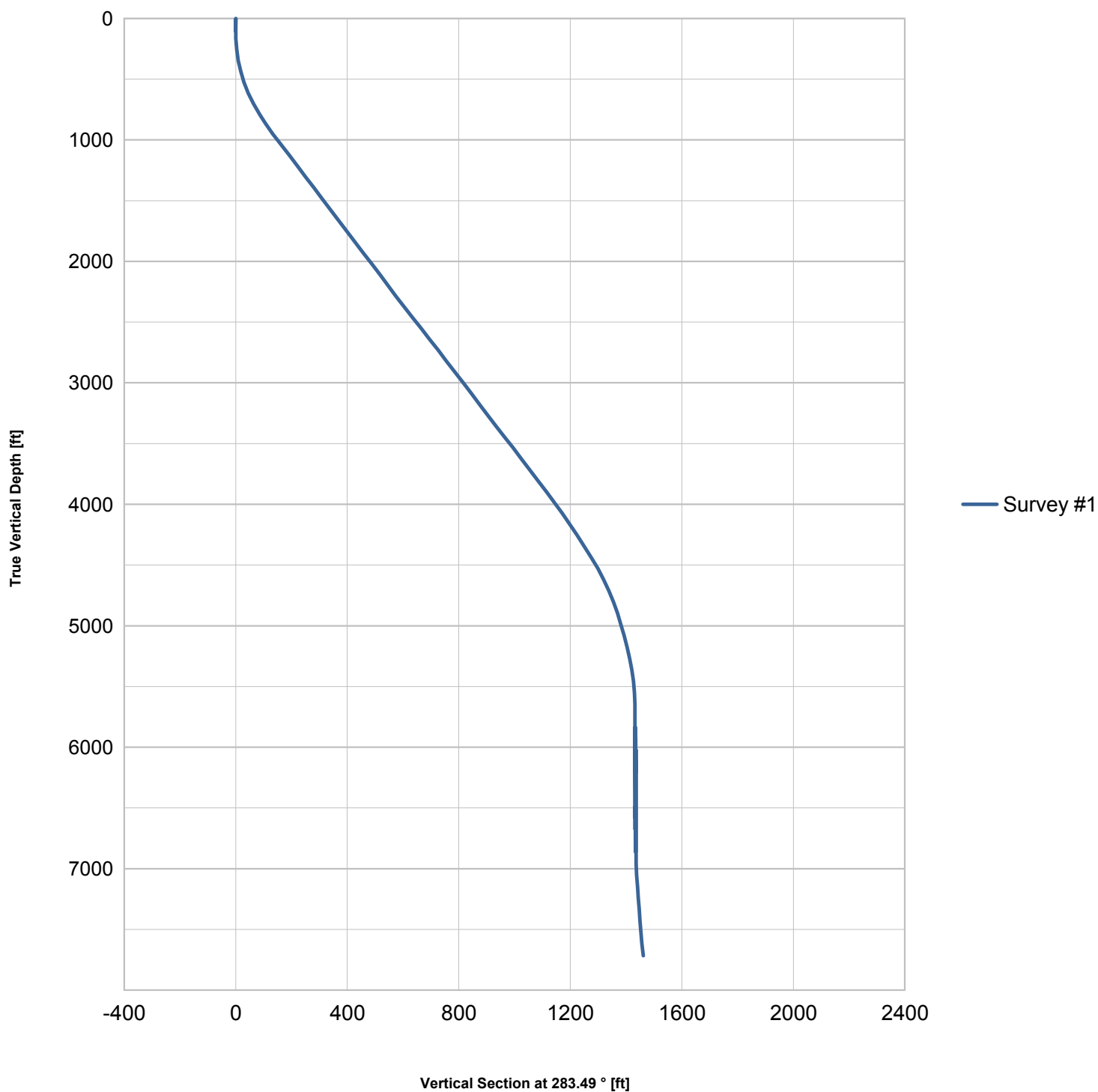
Date	Type	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLS (°/100ft)	Build Rate (°/100ft)	Turn (°/100ft)	TFace (°)
5/2/2013	NORMAL	1,901.0	17.88	284.05	1,839.28	98.01	-415.80	427.19	0.65	-0.65	-0.24	186.60
	NORMAL	1,995.0	18.79	284.17	1,928.50	105.22	-444.48	456.76	0.97	0.97	0.13	2.43
	NORMAL	2,089.0	18.72	283.31	2,017.51	112.40	-473.84	486.98	0.30	-0.07	-0.91	255.39
	NORMAL	2,184.0	18.29	283.70	2,107.60	119.44	-503.15	517.13	0.47	-0.45	0.41	164.13
	NORMAL	2,277.0	17.61	281.88	2,196.07	125.79	-531.10	545.79	0.95	-0.73	-1.96	218.65
	NORMAL	2,371.0	17.80	284.21	2,285.62	132.24	-558.94	574.37	0.78	0.20	2.48	76.10
	NORMAL	2,465.0	19.10	286.68	2,374.79	140.19	-587.60	604.09	1.61	1.38	2.63	32.19
	NORMAL	2,558.0	18.61	286.40	2,462.80	148.74	-616.41	634.11	0.54	-0.53	-0.30	190.33
	NORMAL	2,652.0	19.35	285.85	2,551.69	157.23	-645.78	664.65	0.81	0.79	-0.59	346.15
	NORMAL	2,746.0	18.97	284.06	2,640.48	165.20	-675.59	695.48	0.74	-0.40	-1.90	236.26
	NORMAL	2,841.0	18.49	283.99	2,730.45	172.59	-705.18	725.99	0.51	-0.51	-0.07	182.65
	NORMAL	2,935.0	18.06	284.76	2,819.71	179.91	-733.74	755.46	0.52	-0.46	0.82	151.05
	NORMAL	3,029.0	18.67	283.26	2,908.92	187.07	-762.47	785.07	0.82	0.65	-1.60	321.52
	NORMAL	3,123.0	18.35	284.08	2,998.06	194.12	-791.47	814.91	0.44	-0.34	0.87	141.26
5/3/2013	NORMAL	3,218.0	18.69	282.87	3,088.14	201.15	-820.81	845.09	0.54	0.36	-1.27	310.92
	NORMAL	3,312.0	18.29	282.35	3,177.29	207.66	-849.90	874.89	0.46	-0.43	-0.55	202.16
	NORMAL	3,405.0	17.93	282.66	3,265.68	213.92	-878.12	903.80	0.40	-0.39	0.33	165.16
	NORMAL	3,501.0	18.87	282.80	3,356.77	220.59	-907.68	934.10	0.98	0.98	0.15	2.76
	NORMAL	3,594.0	18.81	283.39	3,444.79	227.40	-936.93	964.13	0.21	-0.06	0.63	107.76
	NORMAL	3,689.0	18.63	280.65	3,534.76	233.75	-966.74	994.60	0.94	-0.19	-2.88	257.14
	NORMAL	3,783.0	18.21	279.34	3,623.95	238.91	-995.99	1,024.25	0.63	-0.45	-1.39	223.96
	NORMAL	3,878.0	18.26	282.34	3,714.18	244.50	-1,025.18	1,053.93	0.99	0.05	3.16	88.38
	NORMAL	3,972.0	18.31	284.75	3,803.43	251.40	-1,053.85	1,083.42	0.81	0.05	2.56	87.36
	NORMAL	4,069.0	18.25	285.25	3,895.54	259.28	-1,083.23	1,113.83	0.17	-0.06	0.52	111.17
	NORMAL	4,162.0	17.92	286.11	3,983.94	267.08	-1,111.03	1,142.68	0.46	-0.35	0.92	141.44
	NORMAL	4,256.0	17.36	286.98	4,073.52	275.19	-1,138.33	1,171.12	0.66	-0.60	0.93	155.20
	NORMAL	4,351.0	16.24	287.58	4,164.47	283.34	-1,164.55	1,198.52	1.19	-1.18	0.63	171.49
	NORMAL	4,445.0	16.03	286.96	4,254.77	291.09	-1,189.50	1,224.59	0.29	-0.22	-0.66	219.07
	NORMAL	4,540.0	15.32	282.20	4,346.24	297.57	-1,214.31	1,250.23	1.55	-0.75	-5.01	238.82
	NORMAL	4,633.0	15.29	281.66	4,435.94	302.65	-1,238.33	1,274.77	0.16	-0.03	-0.58	257.85
	NORMAL	4,728.0	13.59	281.47	4,527.93	307.40	-1,261.54	1,298.44	1.79	-1.79	-0.20	181.50
	NORMAL	4,822.0	12.35	281.88	4,619.53	311.66	-1,282.20	1,319.53	1.32	-1.32	0.44	175.96
	NORMAL	4,916.0	10.92	283.60	4,711.60	315.83	-1,300.69	1,338.48	1.57	-1.52	1.83	167.21
	NORMAL	5,009.0	9.31	282.23	4,803.15	319.49	-1,316.61	1,354.81	1.75	-1.73	-1.47	187.83
	NORMAL	5,102.0	8.00	283.98	4,895.09	322.65	-1,330.24	1,368.80	1.44	-1.41	1.88	169.50
	NORMAL	5,197.0	7.47	283.18	4,989.23	325.66	-1,342.67	1,381.59	0.57	-0.56	-0.84	191.09
	NORMAL	5,291.0	6.82	283.40	5,082.50	328.34	-1,354.04	1,393.28	0.69	-0.69	0.23	177.70
	NORMAL	5,384.0	6.25	280.56	5,174.89	330.55	-1,364.39	1,403.86	0.70	-0.61	-3.05	208.15
	NORMAL	5,479.0	5.38	287.95	5,269.40	332.87	-1,373.71	1,413.46	1.21	-0.92	7.78	142.92
	NORMAL	5,573.0	3.82	276.03	5,363.10	334.56	-1,381.02	1,420.96	1.94	-1.66	-12.68	205.65
5/4/2013	NORMAL	5,668.0	2.80	280.95	5,457.94	335.33	-1,386.45	1,426.42	1.11	-1.07	5.18	166.88
	NORMAL	5,762.0	1.81	267.58	5,551.86	335.70	-1,390.18	1,430.14	1.19	-1.05	-14.22	201.94
	NORMAL	5,856.0	0.53	199.09	5,645.84	335.23	-1,391.81	1,431.61	1.80	-1.36	-72.86	196.97
	NORMAL	5,949.0	0.69	264.74	5,738.84	334.77	-1,392.51	1,432.18	0.73	0.17	70.59	111.33
	NORMAL	6,042.0	0.62	332.65	5,831.84	335.17	-1,393.30	1,433.04	0.79	-0.08	73.02	128.49
	NORMAL	6,136.0	0.94	308.54	5,925.83	336.10	-1,394.13	1,434.07	0.48	0.34	-25.65	301.79
	NORMAL	6,229.0	0.70	214.79	6,018.82	336.11	-1,395.05	1,434.97	1.30	-0.26	-100.81	215.32
	NORMAL	6,323.0	1.18	214.72	6,112.81	334.84	-1,395.93	1,435.53	0.51	0.51	-0.07	359.83
	NORMAL	6,417.0	0.83	77.75	6,206.80	334.19	-1,395.82	1,435.27	1.99	-0.37	-145.71	197.59
	NORMAL	6,511.0	1.10	32.32	6,300.79	335.10	-1,394.67	1,434.36	0.84	0.29	-48.33	265.77
	NORMAL	6,604.0	0.88	63.88	6,393.78	336.17	-1,393.55	1,433.52	0.62	-0.24	33.94	127.24
	NORMAL	6,699.0	0.27	60.10	6,488.77	336.60	-1,392.70	1,432.80	0.64	-0.64	-3.98	181.67
5/5/2013	NORMAL	6,793.0	0.96	22.42	6,582.76	337.44	-1,392.21	1,432.52	0.81	0.73	-40.09	309.85
	NORMAL	6,887.0	0.95	326.95	6,676.75	338.82	-1,392.34	1,432.96	0.95	-0.01	-59.01	241.70
	NORMAL	6,982.0	0.78	211.87	6,771.75	338.93	-1,393.11	1,433.74	1.54	-0.18	-121.14	208.89
	NORMAL	7,076.0	1.43	219.38	6,865.73	337.48	-1,394.19	1,434.45	0.71	0.69	7.99	16.33
	NORMAL	7,170.0	2.39	222.87	6,959.68	335.14	-1,396.27	1,435.92	1.03	1.02	3.71	8.65

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 (°)
5/5/2013	NORMAL	7,264.0	2.68	234.23	7,053.59	332.42	-1,399.38	1,438.32	0.62	0.31	12.09	65.76
	NORMAL	7,358.0	2.31	241.54	7,147.50	330.23	-1,402.83	1,441.16	0.52	-0.39	7.78	142.92
	NORMAL	7,453.0	2.72	243.06	7,242.40	328.29	-1,406.52	1,444.30	0.44	0.43	1.60	10.00
	NORMAL	7,546.0	2.30	241.04	7,335.31	326.39	-1,410.12	1,447.36	0.46	-0.45	-2.17	190.89
	NORMAL	7,641.0	2.48	244.51	7,430.23	324.58	-1,413.65	1,450.36	0.24	0.19	3.65	40.54
	NORMAL	7,735.0	2.62	237.63	7,524.14	322.56	-1,417.30	1,453.44	0.36	0.15	-7.32	291.12
	NORMAL	7,829.0	3.08	248.54	7,618.02	320.48	-1,421.46	1,457.01	0.75	0.49	11.61	55.24
	NORMAL	7,862.0	3.43	254.95	7,650.97	319.90	-1,423.24	1,458.60	1.53	1.06	19.42	49.35
	NORMAL	7,927.0	3.43	254.95	7,715.85	318.89	-1,427.00	1,462.02	0.00	0.00	0.00	0.00

3 Charts

3.1 Vertical Section View



3.2 Plan View

