

1 General

1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

1.2 Well/Wellbore Information

Well	PA 23-2	Wellbore No.	00
Wellbore Legal Name	PA 23-2	Common Wellbore Name	PA 23-2
Project	PA 02-07S-095W	Site	GV 86-2 Pad
Vertical Section Azimuth	45.74 (°)	North reference	
Origin N/S		Origin E/W	
Spud date	2/23/2014	UWI	PA 23-2
Active datum	KB @5,847.0ft (above Mean Sea Level)		

2 Survey Name

2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	
Date Started	2/23/2014	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 (°)
2/23/2014	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/23/2014	NORMAL	70.0	0.35	325.46	70.00	0.18	-0.12	0.04	0.50	0.50	0.00	325.46
	NORMAL	161.0	1.14	50.36	160.99	0.98	0.42	0.99	1.28	0.87	93.30	102.35
	NORMAL	251.0	1.58	56.16	250.97	2.24	2.14	3.10	0.51	0.49	6.44	20.29
	NORMAL	342.0	2.46	53.09	341.91	4.12	4.74	6.27	0.97	0.97	-3.37	351.45
	NORMAL	432.0	4.40	47.37	431.75	7.61	8.83	11.64	2.19	2.16	-6.36	347.13
	NORMAL	523.0	5.98	43.07	522.37	13.44	14.63	19.86	1.79	1.74	-4.73	344.02
	NORMAL	615.0	5.98	44.21	613.87	20.38	21.25	29.44	0.13	0.00	1.24	90.57
	NORMAL	692.0	5.60	46.93	690.48	25.82	26.79	37.20	0.61	-0.49	3.53	145.51
	NORMAL	784.0	6.95	42.68	781.92	32.98	33.84	47.25	1.55	1.47	-4.62	338.89
	NORMAL	849.0	7.02	44.03	846.44	38.72	39.27	55.15	0.27	0.11	2.08	67.58
	NORMAL	913.0	7.02	44.03	909.96	44.35	44.70	62.97	0.00	0.00	0.00	0.00
2/24/2014	NORMAL	70.0	0.35	325.46	69.09	5.14	10.32	10.98	0.00	0.79	9.32	182.83
	NORMAL	161.0	1.14	50.36	160.09	5.95	10.86	11.93	1.28	0.87	93.30	102.35
	NORMAL	251.0	1.58	56.16	250.06	7.21	12.58	14.04	0.51	0.49	6.44	20.29
	NORMAL	342.0	2.46	53.09	341.01	9.08	15.18	17.21	0.97	0.97	-3.37	351.45
	NORMAL	432.0	4.40	47.37	430.84	12.58	19.27	22.58	2.19	2.16	-6.36	347.13
	NORMAL	523.0	5.98	43.07	521.46	18.41	25.07	30.80	1.79	1.74	-4.73	344.02
	NORMAL	615.0	5.98	44.21	612.96	25.34	31.69	40.38	0.13	0.00	1.24	90.57
	NORMAL	692.0	5.60	46.93	689.57	30.78	37.23	48.15	0.61	-0.49	3.53	145.51
	NORMAL	784.0	6.95	42.68	781.02	37.94	44.28	58.19	1.55	1.47	-4.62	338.89

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 (")
2/24/2014	NORMAL	849.0	7.02	44.03	845.54	43.69	49.71	66.09	0.27	0.11	2.08	67.58
	NORMAL	961.0	7.12	47.16	956.69	53.33	59.55	79.87	0.36	0.09	2.79	77.01
	NORMAL	1,056.0	7.21	46.64	1,050.94	61.42	68.20	91.72	0.12	0.09	-0.55	323.96
	NORMAL	1,151.0	6.86	47.07	1,145.23	69.38	76.69	103.35	0.37	-0.37	0.45	171.66
	NORMAL	1,246.0	6.51	47.08	1,239.58	76.91	84.79	114.40	0.37	-0.37	0.01	179.81
	NORMAL	1,341.0	6.33	50.67	1,333.99	83.90	92.79	125.01	0.46	-0.19	3.78	115.93
	NORMAL	1,435.0	6.51	48.31	1,427.40	90.73	100.77	135.49	0.34	0.19	-2.51	303.12
	NORMAL	1,531.0	7.03	38.11	1,522.73	98.97	108.46	146.75	1.36	0.54	-10.63	288.27
	NORMAL	1,625.0	6.24	41.27	1,616.10	107.34	115.38	157.55	0.93	-0.84	3.36	156.76
	NORMAL	1,720.0	6.20	38.67	1,710.54	115.22	121.99	167.79	0.30	-0.04	-2.74	260.63
	NORMAL	1,815.0	5.04	47.30	1,805.09	122.06	128.27	177.05	1.51	-1.22	9.08	148.17
	NORMAL	1,910.0	4.92	45.85	1,899.73	127.73	134.26	185.29	0.18	-0.13	-1.53	225.65
	NORMAL	2,004.0	4.35	52.47	1,993.42	132.71	139.98	192.86	0.83	-0.61	7.04	140.08
	NORMAL	2,099.0	4.39	54.34	2,088.15	137.02	145.79	200.04	0.16	0.04	1.97	75.25
2/25/2014	NORMAL	2,194.0	4.26	49.49	2,182.88	141.43	151.42	207.15	0.41	-0.14	-5.11	248.03
	NORMAL	2,289.0	4.02	48.91	2,277.63	145.91	156.62	214.00	0.26	-0.25	-0.61	189.61
	NORMAL	2,384.0	3.83	49.92	2,372.41	150.14	161.55	220.49	0.21	-0.20	1.06	160.51
	NORMAL	2,479.0	4.31	46.55	2,467.17	154.64	166.57	227.22	0.56	0.51	-3.55	331.83
	NORMAL	2,574.0	4.20	45.85	2,561.90	159.52	171.66	234.27	0.13	-0.12	-0.74	204.93
	NORMAL	2,668.0	3.96	45.85	2,656.67	164.18	176.46	240.96	0.26	-0.26	0.00	180.00
	NORMAL	2,763.0	5.10	47.54	2,750.37	169.31	181.93	248.46	1.21	1.20	1.78	7.52
	NORMAL	2,858.0	5.17	48.78	2,844.99	174.98	188.26	256.95	0.14	0.07	1.31	58.38
	NORMAL	2,953.0	4.84	47.60	2,939.63	180.51	194.44	265.23	0.38	-0.35	-1.24	196.74
	NORMAL	3,048.0	4.68	47.52	3,034.30	185.83	200.26	273.11	0.17	-0.17	-0.08	182.34
	NORMAL	3,143.0	5.63	47.82	3,128.91	191.57	206.57	281.64	1.00	1.00	0.32	1.77
	NORMAL	3,238.0	5.59	47.59	3,223.46	197.82	213.44	290.93	0.05	-0.04	-0.24	209.23
	NORMAL	3,333.0	5.16	48.10	3,318.04	203.80	220.04	299.82	0.46	-0.45	0.54	173.91
	NORMAL	3,428.0	6.48	41.02	3,412.55	210.69	226.74	309.43	1.58	1.39	-7.45	327.91
	NORMAL	3,523.0	6.16	40.13	3,506.97	218.64	233.54	319.85	0.35	-0.34	-0.94	196.58
	NORMAL	3,618.0	6.10	38.35	3,601.43	226.49	239.96	329.92	0.21	-0.06	-1.87	251.60
	NORMAL	3,712.0	5.80	45.49	3,694.92	233.74	246.44	339.63	0.85	-0.32	7.60	115.59
	NORMAL	3,807.0	5.36	47.08	3,789.47	240.12	253.11	348.86	0.49	-0.46	1.67	161.43
	NORMAL	3,903.0	5.29	45.68	3,885.06	246.27	259.56	357.77	0.15	-0.07	-1.46	240.99
	NORMAL	3,998.0	4.34	47.99	3,979.72	251.74	265.37	365.74	1.02	-1.00	2.43	169.61
	NORMAL	4,093.0	4.79	45.71	4,074.42	256.91	270.88	373.30	0.51	0.47	-2.40	336.90
	NORMAL	4,188.0	4.71	44.70	4,169.10	262.45	276.46	381.17	0.12	-0.08	-1.06	225.77
	NORMAL	4,282.0	4.13	43.56	4,262.82	267.65	281.51	388.41	0.62	-0.62	-1.21	188.05
	NORMAL	4,378.0	3.96	46.02	4,358.58	272.46	286.28	395.18	0.25	-0.18	2.56	135.63
	NORMAL	4,472.0	4.58	49.28	4,452.32	277.16	291.46	402.17	0.71	0.66	3.47	23.01
	NORMAL	4,567.0	4.54	46.32	4,547.02	282.23	297.05	409.71	0.25	-0.04	-3.12	258.88
2/26/2014	NORMAL	4,662.0	5.80	52.52	4,641.63	287.75	303.58	418.24	1.45	1.33	6.53	27.02
	NORMAL	4,757.0	5.63	55.43	4,736.16	293.31	311.23	427.60	0.35	-0.18	3.06	121.84
	NORMAL	4,852.0	6.55	50.60	4,830.62	299.40	319.25	437.59	1.11	0.97	-5.08	328.47
	NORMAL	4,947.0	6.16	52.70	4,925.04	305.92	327.49	448.05	0.48	-0.41	2.21	150.25
	NORMAL	5,041.0	5.45	53.23	5,018.56	311.65	335.08	457.48	0.76	-0.76	0.56	175.95
	NORMAL	5,136.0	5.10	54.02	5,113.15	316.83	342.11	466.14	0.38	-0.37	0.83	168.67
	NORMAL	5,231.0	4.48	57.01	5,207.82	321.33	348.64	473.95	0.70	-0.65	3.15	159.55
	NORMAL	5,326.0	4.57	44.09	5,302.53	326.07	354.38	481.37	1.07	0.09	-13.60	268.58
	NORMAL	5,420.0	3.77	43.21	5,396.28	331.02	359.11	488.21	0.85	-0.85	-0.94	184.13
	NORMAL	5,515.0	2.74	37.70	5,491.12	335.09	362.63	493.57	1.13	-1.08	-5.80	194.16
2/27/2014	NORMAL	5,610.0	2.37	38.02	5,586.03	338.43	365.23	497.77	0.39	-0.39	0.34	177.95
	NORMAL	5,705.0	2.11	32.05	5,680.96	341.46	367.37	501.41	0.37	-0.27	-6.28	218.95
	NORMAL	5,800.0	1.49	32.05	5,775.91	343.99	368.95	504.31	0.65	-0.65	0.00	180.00
	NORMAL	5,894.0	0.88	47.69	5,869.89	345.51	370.14	506.22	0.73	-0.65	16.64	159.74
	NORMAL	5,989.0	0.32	70.30	5,964.88	346.09	370.92	507.19	0.63	-0.59	23.80	168.12
	NORMAL	6,084.0	0.26	208.09	6,059.88	345.99	371.07	507.23	0.57	-0.06	145.04	161.18

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 (°)
2/27/2014	NORMAL	6,179.0	0.35	182.52	6,154.88	345.51	370.96	506.81	0.17	0.09	-26.92	290.25
	NORMAL	6,274.0	1.14	232.00	6,249.88	344.64	370.20	505.66	1.00	0.83	52.08	65.73
	NORMAL	6,369.0	0.53	225.93	6,344.86	343.75	369.14	504.28	0.65	-0.64	-6.39	185.22
	NORMAL	6,464.0	0.93	193.99	6,439.86	342.70	368.64	503.19	0.59	0.42	-33.62	297.78
	NORMAL	6,559.0	1.64	202.55	6,534.83	340.70	367.93	501.28	0.77	0.75	9.01	19.44
2/28/2014	NORMAL	6,653.0	2.36	208.11	6,628.78	337.75	366.50	498.20	0.79	0.77	5.91	17.87
	NORMAL	6,748.0	2.80	224.75	6,723.68	334.37	363.95	494.02	0.91	0.46	17.52	68.06
	NORMAL	6,843.0	2.02	221.27	6,818.60	331.47	361.21	490.03	0.84	-0.82	-3.66	188.89
	NORMAL	6,938.0	2.64	223.56	6,913.52	328.62	358.60	486.17	0.66	0.65	2.41	9.69
	NORMAL	7,033.0	3.42	220.45	7,008.38	324.88	355.25	481.16	0.84	0.82	-3.27	346.54
	NORMAL	7,128.0	4.01	225.40	7,103.18	320.39	351.05	475.02	0.71	0.62	5.21	31.01
	NORMAL	7,223.0	4.21	229.28	7,197.94	315.79	346.04	468.22	0.36	0.21	4.08	56.22
	NORMAL	7,318.0	4.22	238.02	7,292.68	311.66	340.43	461.32	0.68	0.01	9.20	93.47
	NORMAL	7,413.0	4.59	234.19	7,387.40	307.58	334.38	454.15	0.50	0.39	-4.03	319.59
	NORMAL	7,507.0	4.65	235.07	7,481.10	303.20	328.21	446.67	0.10	0.06	0.94	50.19
	NORMAL	7,515.0	4.81	230.72	7,489.07	302.80	327.69	446.01	4.91	2.00	-54.37	291.86
	NORMAL	7,580.0	4.81	230.72	7,553.84	299.35	323.47	440.58	0.00	0.00	0.00	0.00