

1 General

1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

1.2 Well/Wellbore Information

Well	PA 321-7	Wellbore No.	00
Wellbore Legal Name	PA 321-7	Common Wellbore Name	PA 321-7
Project	PA 06-07S-095W	Site	PA 14-6 Pad
Vertical Section Azimuth	130.28 (°)	North reference	True
Origin N/S		Origin E/W	
Spud date	2/13/2014	UWI	PA 321-7
Active datum	KB @5,179.0ft (above Mean Sea Level)		

2 Survey Name

2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	
Date Started	2/13/2014	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 (°)
2/13/2014	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2/13/2014	NORMAL	73.0	0.09	279.84	73.00	0.01	-0.06	-0.05	0.12	0.12	0.00	279.84
2/14/2014	NORMAL	103.0	1.06	146.07	103.00	-0.22	0.08	0.20	3.75	3.23	-445.90	222.92
	NORMAL	134.0	2.20	152.49	133.99	-0.98	0.51	1.02	3.72	3.68	20.71	12.32
	NORMAL	164.0	2.20	136.93	163.96	-1.91	1.17	2.13	1.98	0.00	-51.87	262.23
	NORMAL	194.0	2.38	134.03	193.94	-2.77	2.01	3.32	0.71	0.60	-9.67	325.77
	NORMAL	224.0	2.73	131.57	223.91	-3.67	2.99	4.66	1.22	1.17	-8.20	341.37
	NORMAL	254.0	2.82	142.03	253.88	-4.73	3.98	6.10	1.71	0.30	34.87	85.17
	NORMAL	284.0	3.52	130.61	283.83	-5.91	5.13	7.74	3.13	2.33	-38.07	312.15
	NORMAL	315.0	3.61	127.35	314.77	-7.12	6.63	9.67	0.72	0.29	-10.52	292.31
	NORMAL	345.0	4.22	129.20	344.70	-8.39	8.24	11.71	2.08	2.03	6.17	12.62
	NORMAL	375.0	5.01	135.09	374.60	-10.02	10.02	14.12	3.07	2.63	19.63	33.92
	NORMAL	406.0	6.16	133.07	405.45	-12.11	12.19	17.13	3.76	3.71	-6.52	349.29
	NORMAL	436.0	7.13	132.71	435.25	-14.48	14.73	20.60	3.24	3.23	-1.20	357.36
	NORMAL	467.0	8.36	134.91	465.97	-17.37	17.74	24.77	4.08	3.97	7.10	14.64
	NORMAL	497.0	9.68	129.29	495.60	-20.51	21.24	29.46	5.29	4.40	-18.73	323.48
	NORMAL	541.0	10.90	127.71	538.89	-25.40	27.39	37.32	2.85	2.77	-3.59	346.20
	NORMAL	571.0	11.91	125.51	568.30	-28.93	32.16	43.24	3.67	3.37	-7.33	335.62
	NORMAL	601.0	12.18	128.67	597.64	-32.70	37.15	49.49	2.37	0.80	10.53	69.28
	NORMAL	631.0	12.70	127.00	626.93	-36.67	42.25	55.94	2.11	1.73	-5.57	324.51
	NORMAL	662.0	13.41	125.68	657.13	-40.81	47.90	62.93	2.48	2.29	-4.26	336.58

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PICEANCE VLY

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 (°)
2/14/2014	NORMAL	692.0	14.02	128.94	686.28	-45.13	53.55	70.03	3.28	2.03	10.87	53.31
	NORMAL	722.0	15.08	126.47	715.31	-49.73	59.51	77.55	4.09	3.53	-8.23	328.46
	NORMAL	752.0	15.69	127.62	744.24	-54.53	65.86	85.50	2.27	2.03	3.83	27.13
	NORMAL	783.0	16.48	129.55	774.03	-59.89	72.58	94.08	3.08	2.55	6.23	35.02
	NORMAL	813.0	17.67	128.94	802.70	-65.46	79.40	102.89	4.01	3.97	-2.03	351.15
	NORMAL	843.0	18.29	129.20	831.24	-71.29	86.59	112.15	2.08	2.07	0.87	7.50
	NORMAL	873.0	19.21	127.71	859.65	-77.29	94.14	121.79	3.46	3.07	-4.97	331.79
	NORMAL	903.0	20.22	129.11	887.89	-83.58	102.07	131.90	3.72	3.37	4.67	25.72
	NORMAL	933.0	20.61	131.13	916.00	-90.32	110.07	142.36	2.68	1.30	6.73	61.98
	NORMAL	965.0	21.76	130.34	945.84	-97.87	118.83	153.93	3.70	3.59	-2.47	345.69
	NORMAL	997.0	22.20	131.57	975.51	-105.72	127.88	165.90	1.99	1.38	3.84	46.87
	NORMAL	1,029.0	22.81	133.42	1,005.08	-113.99	136.90	178.14	2.92	1.91	5.78	50.11
	NORMAL	1,061.0	24.00	134.47	1,034.44	-122.81	146.05	190.83	3.94	3.72	3.28	19.80
	NORMAL	1,092.0	24.31	133.77	1,062.73	-131.64	155.16	203.48	1.36	1.00	-2.26	316.94
	NORMAL	1,124.0	25.23	132.19	1,091.79	-140.78	164.97	216.87	3.54	2.88	-4.94	323.54
	NORMAL	1,156.0	25.76	131.92	1,120.67	-150.01	175.20	230.64	1.70	1.66	-0.84	347.51
	NORMAL	1,188.0	26.59	132.28	1,149.39	-159.47	185.67	244.75	2.64	2.59	1.13	10.99
	NORMAL	1,251.0	27.69	130.52	1,205.45	-178.47	207.23	273.48	2.16	1.75	-2.79	323.09
	NORMAL	1,347.0	29.41	131.05	1,289.78	-208.44	241.96	319.36	1.81	1.79	0.55	8.61
2/15/2014	NORMAL	1,442.0	28.48	127.44	1,372.91	-237.53	277.54	365.31	2.08	-0.98	-3.80	240.40
	NORMAL	1,537.0	30.07	127.71	1,455.78	-265.86	314.36	411.71	1.68	1.67	0.28	4.86
	NORMAL	1,590.0	28.79	127.09	1,501.94	-281.68	335.04	437.72	2.48	-2.42	-1.17	193.12
2/16/2014	NORMAL	1,666.0	28.66	125.60	1,568.59	-303.33	364.46	474.15	0.96	-0.17	-1.96	259.06
	NORMAL	1,730.0	28.97	126.30	1,624.66	-321.44	389.43	504.91	0.72	0.48	1.09	47.73
	NORMAL	1,825.0	28.00	128.32	1,708.16	-348.89	425.47	550.15	1.44	-1.02	2.13	136.08
	NORMAL	1,921.0	27.43	129.82	1,793.15	-377.02	460.14	594.79	0.94	-0.59	1.56	129.91
	NORMAL	2,016.0	27.08	131.75	1,877.60	-405.43	493.08	638.29	1.00	-0.37	2.03	112.46
	NORMAL	2,111.0	27.87	131.22	1,961.89	-434.46	525.91	682.10	0.87	0.83	-0.56	342.57
	NORMAL	2,207.0	27.47	129.90	2,046.91	-463.45	559.77	726.68	0.76	-0.42	-1.38	236.29
	NORMAL	2,302.0	28.79	131.31	2,130.69	-492.61	593.77	771.47	1.56	1.39	1.48	27.35
	NORMAL	2,397.0	28.70	131.13	2,213.98	-522.72	628.13	817.15	0.13	-0.09	-0.19	223.81
	NORMAL	2,493.0	28.26	131.49	2,298.37	-552.93	662.52	862.92	0.49	-0.46	0.38	158.84
	NORMAL	2,588.0	28.31	131.31	2,382.02	-582.70	696.29	907.93	0.10	0.05	-0.19	300.30
	NORMAL	2,684.0	27.60	129.99	2,466.82	-612.02	730.43	952.92	0.98	-0.74	-1.38	220.49
	NORMAL	2,780.0	26.11	129.29	2,552.47	-639.69	763.82	996.29	1.59	-1.55	-0.73	191.67
	NORMAL	2,875.0	24.22	129.20	2,638.45	-665.25	795.10	1,036.68	1.99	-1.99	-0.09	181.12
	NORMAL	2,970.0	22.59	129.02	2,725.63	-689.05	824.38	1,074.40	1.72	-1.72	-0.19	182.43
	NORMAL	3,065.0	21.45	123.49	2,813.70	-710.13	853.04	1,109.90	2.49	-1.20	-5.82	238.65
2/17/2014	NORMAL	3,160.0	20.00	132.10	2,902.58	-730.61	879.59	1,143.39	3.55	-1.53	9.06	119.43
	NORMAL	3,256.0	18.37	131.57	2,993.24	-751.66	903.09	1,174.93	1.71	-1.70	-0.55	185.85
	NORMAL	3,351.0	16.48	132.19	3,083.88	-770.64	924.28	1,203.36	2.00	-1.99	0.65	174.69
	NORMAL	3,446.0	15.43	127.27	3,175.22	-787.35	944.32	1,229.45	1.80	-1.11	-5.18	229.83
	NORMAL	3,542.0	14.86	126.74	3,267.89	-802.44	964.35	1,254.49	0.61	-0.59	-0.55	193.40
	NORMAL	3,638.0	14.64	128.50	3,360.72	-817.36	983.71	1,278.91	0.52	-0.23	1.83	117.00
	NORMAL	3,733.0	12.75	122.52	3,453.02	-830.47	1,001.94	1,301.30	2.48	-1.99	-6.29	213.96
	NORMAL	3,829.0	10.99	122.34	3,546.97	-841.06	1,018.61	1,320.86	1.83	-1.83	-0.19	181.12
	NORMAL	3,924.0	9.71	121.29	3,640.42	-850.07	1,033.11	1,337.74	1.36	-1.35	-1.11	187.87
	NORMAL	4,020.0	8.09	127.35	3,735.26	-858.37	1,045.40	1,352.48	1.95	-1.69	6.31	152.91
	NORMAL	4,116.0	4.75	130.52	3,830.65	-865.05	1,053.79	1,363.21	3.50	-3.48	3.30	175.52
	NORMAL	4,211.0	4.53	132.10	3,925.34	-870.12	1,059.56	1,370.89	0.27	-0.23	1.66	150.63
	NORMAL	4,306.0	2.73	122.08	4,020.14	-873.84	1,064.26	1,376.88	2.00	-1.89	-10.55	194.46
	NORMAL	4,401.0	0.88	106.35	4,115.09	-875.25	1,066.88	1,379.79	2.00	-1.95	-16.56	187.22
	NORMAL	4,497.0	0.61	106.88	4,211.08	-875.60	1,068.08	1,380.93	0.28	-0.28	0.55	178.80
	NORMAL	4,592.0	0.61	102.57	4,306.08	-875.86	1,069.06	1,381.84	0.05	0.00	-4.54	267.85
2/18/2014	NORMAL	4,688.0	0.53	128.76	4,402.08	-876.25	1,069.90	1,382.74	0.28	-0.08	27.28	119.88
	NORMAL	4,784.0	0.48	128.67	4,498.07	-876.78	1,070.56	1,383.58	0.05	-0.05	-0.09	180.86

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)	Buuld Rate (%/100usft)	Turn (%/100usft)	Tface (°)
2/18/2014	NORMAL	4,878.0	0.61	118.74	4,592.07	-877.27	1,071.31	1,384.47	0.17	0.14	-10.56	318.97
	NORMAL	4,974.0	0.48	125.95	4,688.06	-877.75	1,072.08	1,385.37	0.15	-0.14	7.51	155.76
	NORMAL	5,069.0	0.44	121.03	4,783.06	-878.17	1,072.72	1,386.13	0.06	-0.04	-5.18	222.20
	NORMAL	5,163.0	0.61	129.29	4,877.06	-878.67	1,073.41	1,386.98	0.20	0.18	8.79	28.17
	NORMAL	5,259.0	0.83	134.21	4,973.05	-879.48	1,074.31	1,388.19	0.24	0.23	5.13	18.17
	NORMAL	5,354.0	1.10	142.30	5,068.04	-880.68	1,075.36	1,389.77	0.32	0.28	8.52	30.86
	NORMAL	5,449.0	1.19	147.13	5,163.02	-882.23	1,076.45	1,391.60	0.14	0.09	5.08	49.43
	NORMAL	5,544.0	1.19	144.58	5,258.00	-883.86	1,077.56	1,393.50	0.06	0.00	-2.68	268.73
2/19/2014	NORMAL	5,639.0	1.45	144.67	5,352.97	-885.65	1,078.82	1,395.62	0.27	0.27	0.09	0.50
	NORMAL	5,736.0	1.58	143.17	5,449.94	-887.72	1,080.33	1,398.11	0.14	0.13	-1.55	342.28
	NORMAL	5,832.0	1.67	141.07	5,545.90	-889.87	1,082.00	1,400.78	0.11	0.09	-2.19	325.46
	NORMAL	5,928.0	1.58	181.85	5,641.86	-892.28	1,082.84	1,402.97	1.18	-0.09	42.48	114.64
	NORMAL	6,023.0	1.63	184.57	5,736.83	-894.94	1,082.69	1,404.58	0.10	0.05	2.86	58.09
	NORMAL	6,119.0	1.54	169.19	5,832.79	-897.57	1,082.82	1,406.38	0.45	-0.09	-16.02	250.44
	NORMAL	6,214.0	1.67	162.77	5,927.75	-900.14	1,083.47	1,408.54	0.23	0.14	-6.76	302.63
	NORMAL	6,310.0	1.58	159.26	6,023.72	-902.72	1,084.36	1,410.88	0.14	-0.09	-3.66	226.13
	NORMAL	6,406.0	1.63	155.30	6,119.68	-905.19	1,085.39	1,413.27	0.13	0.05	-4.13	292.28
	NORMAL	6,501.0	1.76	152.58	6,214.64	-907.72	1,086.63	1,415.84	0.16	0.14	-2.86	326.88
	NORMAL	6,597.0	2.15	161.10	6,310.58	-910.73	1,087.89	1,418.75	0.51	0.41	8.87	41.00
	NORMAL	6,692.0	2.73	163.92	6,405.50	-914.59	1,089.10	1,422.17	0.62	0.61	2.97	13.11
2/20/2014	NORMAL	6,737.0	2.81	168.22	6,450.44	-916.70	1,089.62	1,423.93	0.49	0.18	9.56	71.10
	NORMAL	6,782.0	2.81	168.22	6,495.39	-918.86	1,090.07	1,425.67	0.00	0.00	0.00	0.00