

## 1 General

### 1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

### 1.2 Well/Wellbore Information

Well	PA 513-2	Wellbore No.	00
Wellbore Legal Name	PA 513-2	Common Wellbore Name	PA 513-2
Project	PA 02-07S-095W	Site	GV 86-2 Pad
Vertical Section Azimuth	239.04 (°)	North reference	
Origin N/S		Origin E/W	
Spud date	3/16/2014	UWI	PA 513-2
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	3/16/2014	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 (°)
3/16/2014	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3/16/2014	NORMAL	102.0	1.06	320.89	101.99	0.73	-0.60	0.13	1.04	1.04	0.00	320.89
	NORMAL	193.0	1.32	256.99	192.98	1.15	-2.15	1.25	1.41	0.29	-70.22	247.99
	NORMAL	253.0	1.58	244.16	252.96	0.63	-3.57	2.73	0.69	0.43	-21.38	302.16
	NORMAL	344.0	3.43	237.83	343.87	-1.36	-7.00	6.70	2.05	2.03	-6.96	348.32
	NORMAL	434.0	5.72	232.73	433.58	-5.51	-12.85	13.85	2.58	2.54	-5.67	347.38
	NORMAL	526.0	7.92	234.76	524.92	-11.95	-21.67	24.73	2.41	2.39	2.21	7.26
	NORMAL	615.0	9.85	237.48	612.85	-19.58	-33.10	38.46	2.22	2.17	3.06	13.63
	NORMAL	691.0	11.22	239.17	687.57	-26.86	-44.93	52.35	1.85	1.80	2.22	13.54
	NORMAL	783.0	12.57	237.09	777.59	-36.89	-61.02	71.31	1.54	1.47	-2.26	341.36
	NORMAL	875.0	14.42	239.54	867.05	-48.14	-79.31	92.77	2.10	2.01	2.66	18.37
	NORMAL	889.0	14.60	238.58	880.60	-49.94	-82.31	96.28	2.15	1.29	-6.86	306.34
3/17/2014	NORMAL	889.0	14.60	238.58	880.60	-49.94	-82.31	96.28	0.00	0.00	0.00	0.00
	NORMAL	960.0	14.88	238.38	949.25	-59.42	-97.76	114.40	0.54	0.54	-0.28	352.25
	NORMAL	1,055.0	14.95	238.67	1,041.03	-72.23	-118.69	138.93	0.08	-0.03	0.31	111.97
	NORMAL	1,150.0	14.71	239.26	1,132.86	-84.76	-139.52	163.25	0.30	-0.25	0.62	148.11
	NORMAL	1,245.0	14.34	239.60	1,224.82	-96.88	-160.03	187.07	0.40	-0.39	0.36	167.19
	NORMAL	1,340.0	13.97	240.99	1,316.94	-108.40	-180.21	210.30	0.53	-0.39	1.46	138.10
	NORMAL	1,435.0	13.66	241.05	1,409.19	-119.39	-200.05	232.97	0.33	-0.33	0.06	177.38
	NORMAL	1,530.0	13.90	235.81	1,501.46	-131.23	-219.31	255.57	1.34	0.25	-5.52	278.33
	NORMAL	1,624.0	13.61	236.49	1,592.77	-143.68	-237.87	277.90	0.35	-0.31	0.72	151.19

## 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 (°)
3/17/2014	NORMAL	1,719.0	13.18	235.73	1,685.18	-155.95	-256.14	299.87	0.49	-0.45	-0.80	201.90
	NORMAL	1,814.0	12.73	235.78	1,777.76	-167.93	-273.75	321.14	0.47	-0.47	0.05	178.60
	NORMAL	1,909.0	13.19	238.18	1,870.34	-179.54	-291.61	342.42	0.75	0.48	2.53	50.66
3/18/2014	NORMAL	2,004.0	14.16	238.94	1,962.65	-191.25	-310.78	364.88	1.04	1.02	0.80	10.86
	NORMAL	2,098.0	16.20	242.39	2,053.37	-203.26	-332.25	389.47	2.37	2.17	3.67	25.56
	NORMAL	2,193.0	16.04	242.57	2,144.63	-215.44	-355.64	415.80	0.18	-0.17	0.19	162.74
	NORMAL	2,288.0	15.61	241.55	2,236.03	-227.58	-378.53	441.67	0.54	-0.45	-1.07	212.41
	NORMAL	2,383.0	15.12	240.40	2,327.64	-239.79	-400.54	466.83	0.61	-0.52	-1.21	211.32
	NORMAL	2,478.0	14.60	239.69	2,419.46	-251.95	-421.65	491.19	0.58	-0.55	-0.75	198.96
	NORMAL	2,573.0	14.01	237.83	2,511.51	-264.12	-441.72	514.66	0.79	-0.62	-1.96	217.02
	NORMAL	2,668.0	14.17	239.45	2,603.66	-276.15	-461.47	537.78	0.45	0.17	1.71	68.70
	NORMAL	2,763.0	13.89	240.09	2,695.82	-287.75	-481.36	560.81	0.34	-0.29	0.67	151.32
	NORMAL	2,857.0	13.58	240.31	2,787.14	-298.84	-500.73	583.12	0.33	-0.33	0.23	170.54
	NORMAL	2,952.0	12.90	238.64	2,879.61	-309.88	-519.48	604.88	0.82	-0.72	-1.76	208.55
	NORMAL	3,047.0	14.20	241.36	2,971.97	-320.99	-538.76	627.13	1.52	1.37	2.86	27.44
	NORMAL	3,142.0	14.03	242.09	3,064.10	-331.96	-559.16	650.27	0.26	-0.18	0.77	134.03
	NORMAL	3,237.0	13.68	240.08	3,156.33	-342.95	-579.07	673.00	0.63	-0.37	-2.12	233.00
	NORMAL	3,332.0	13.20	240.87	3,248.73	-353.84	-598.28	695.07	0.54	-0.51	0.83	159.45
	NORMAL	3,427.0	12.22	240.64	3,341.40	-364.05	-616.52	715.96	1.03	-1.03	-0.24	182.84
	NORMAL	3,522.0	14.19	241.35	3,433.89	-374.56	-635.51	737.65	2.08	2.07	0.75	5.05
	NORMAL	3,617.0	14.25	241.16	3,525.98	-385.78	-655.97	760.97	0.08	0.06	-0.20	322.03
	NORMAL	3,711.0	14.08	242.13	3,617.12	-396.71	-676.21	783.95	0.31	-0.18	1.03	126.08
	NORMAL	3,806.0	14.34	237.99	3,709.21	-408.35	-696.40	807.25	1.10	0.27	-4.36	282.34
	NORMAL	3,901.0	13.88	239.16	3,801.33	-420.47	-716.23	830.49	0.48	-0.38	1.23	142.08
	NORMAL	3,996.0	13.38	235.40	3,893.63	-432.59	-735.13	852.94	1.13	-0.83	-3.96	234.17
	NORMAL	4,091.0	12.15	238.29	3,986.29	-444.09	-752.68	873.90	1.46	-1.29	3.04	153.97
	NORMAL	4,186.0	11.92	237.57	4,079.20	-454.60	-769.47	893.71	0.29	-0.24	-0.76	212.78
	NORMAL	4,281.0	11.46	243.28	4,172.23	-464.11	-786.18	912.93	1.31	-0.48	6.01	114.46
	NORMAL	4,376.0	10.00	248.41	4,265.57	-471.39	-802.28	930.48	1.84	-1.54	5.40	149.31
	NORMAL	4,471.0	9.38	245.04	4,359.21	-477.69	-816.97	946.32	0.88	-0.65	-3.55	220.80
	NORMAL	4,565.0	8.18	249.04	4,452.11	-483.32	-830.16	960.52	1.43	-1.28	4.26	155.00
	NORMAL	4,660.0	6.99	243.94	4,546.28	-488.27	-841.66	972.94	1.44	-1.25	-5.37	206.99
	NORMAL	4,755.0	6.67	246.20	4,640.61	-493.04	-851.91	984.17	0.44	-0.34	2.38	141.09
	NORMAL	4,850.0	4.74	244.23	4,735.13	-496.97	-860.49	993.55	2.04	-2.03	-2.07	184.81
	NORMAL	4,945.0	2.87	240.24	4,829.92	-499.86	-866.09	999.84	1.99	-1.97	-4.20	186.07
3/19/2014	NORMAL	5,040.0	2.03	232.53	4,924.83	-502.06	-869.49	1,003.89	0.95	-0.88	-8.12	197.60
	NORMAL	5,134.0	1.11	192.16	5,018.80	-503.97	-871.00	1,006.17	1.47	-0.98	-42.95	211.26
	NORMAL	5,229.0	1.07	183.28	5,113.78	-505.75	-871.25	1,007.30	0.18	-0.04	-9.35	252.26
	NORMAL	5,324.0	1.30	193.42	5,208.76	-507.69	-871.55	1,008.55	0.33	0.24	10.67	47.50
	NORMAL	5,419.0	0.79	81.17	5,303.75	-508.63	-871.15	1,008.70	1.85	-0.54	-118.16	204.58
	NORMAL	5,513.0	0.34	77.03	5,397.75	-508.47	-870.24	1,007.83	0.48	-0.48	-4.40	183.12
	NORMAL	5,608.0	0.20	201.80	5,492.75	-508.56	-870.03	1,007.69	0.51	-0.15	131.34	160.11
	NORMAL	5,703.0	0.47	217.88	5,587.75	-509.02	-870.33	1,008.19	0.30	0.28	16.93	27.36
	NORMAL	5,798.0	0.83	219.22	5,682.74	-509.86	-871.00	1,009.20	0.38	0.38	1.41	3.09
	NORMAL	5,893.0	1.13	219.25	5,777.73	-511.12	-872.03	1,010.73	0.32	0.32	0.03	0.11
	NORMAL	5,988.0	0.23	78.93	5,872.72	-511.81	-872.43	1,011.43	1.38	-0.95	-147.71	186.41
	NORMAL	6,083.0	0.17	208.83	5,967.72	-511.90	-872.31	1,011.37	0.38	-0.06	136.74	158.96
	NORMAL	6,177.0	0.30	265.62	6,061.72	-512.04	-872.63	1,011.71	0.27	0.14	60.41	91.30
	NORMAL	6,272.0	0.50	267.08	6,156.72	-512.08	-873.29	1,012.30	0.21	0.21	1.54	3.65
	NORMAL	6,367.0	0.86	270.96	6,251.71	-512.09	-874.42	1,013.27	0.38	0.38	4.08	9.23
	NORMAL	6,462.0	1.41	270.58	6,346.69	-512.06	-876.30	1,014.87	0.58	0.58	-0.40	359.03
	NORMAL	6,557.0	1.84	263.24	6,441.65	-512.23	-878.98	1,017.26	0.50	0.45	-7.73	330.47
3/20/2014	NORMAL	6,652.0	2.03	259.29	6,536.60	-512.72	-882.15	1,020.23	0.24	0.20	-4.16	322.95
	NORMAL	6,746.0	2.51	250.96	6,630.53	-513.70	-885.73	1,023.81	0.62	0.51	-8.86	321.29
	NORMAL	6,842.0	2.99	248.25	6,726.42	-515.32	-890.04	1,028.34	0.52	0.50	-2.82	343.49
	NORMAL	6,936.0	3.17	246.93	6,820.28	-517.25	-894.71	1,033.33	0.21	0.19	-1.40	337.83

## 2.1.2 Survey Stations (Continued)

Date	Type	MD (ft)	Inc. (°)	Azi. (°)	TVD (ft)	N/S (ft)	EW (ft)	V. sec. (ft)	DLS (%/100usft)	Build Rate (%/100usft)	Turn (%/100usft)	Tface (°)
3/20/2014	NORMAL	7,031.0	3.34	247.11	6,915.13	-519.35	-899.68	1,038.67	0.18	0.18	0.19	3.53
	NORMAL	7,126.0	3.47	249.70	7,009.96	-521.42	-904.92	1,044.24	0.21	0.14	2.73	51.10
	NORMAL	7,221.0	3.60	246.20	7,104.78	-523.63	-910.35	1,050.02	0.27	0.14	-3.68	299.31
	NORMAL	7,316.0	3.99	244.18	7,199.57	-526.27	-916.05	1,056.27	0.43	0.41	-2.13	340.07
	NORMAL	7,411.0	4.40	239.73	7,294.32	-529.55	-922.18	1,063.21	0.55	0.43	-4.68	319.32
	NORMAL	7,506.0	4.70	240.50	7,389.02	-533.30	-928.71	1,070.74	0.32	0.32	0.81	11.89
	NORMAL	7,572.0	4.70	240.50	7,454.80	-535.96	-933.42	1,076.15	0.00	0.00	0.00	0.00