

1 General

1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

1.2 Well Information

Well	PA 411-21	Wellbore No.	OH
Well Name	PA 411-21	Common Name	PA 411-21
Project	PA 21-06S-095W	Site	PA 22-21 Pad
Vertical Section	340.15 (°)	North Reference	True
Azimuth		Origin E/W	
Origin N/S		UWI	PA 411-21
Spud Date	4/18/2011		
Active Datum	KB @6,050.0ft (above Mean Sea Level)		

2 Survey Name

2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	SDI
Date Started	4/18/2011	Ended	
Tool Name	MWD	Engineer	MATTHEW / MIKE

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 (°)
4/18/2011	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4/18/2011	NORMAL	84.0	0.35	117.42	84.00	-0.12	0.23	-0.19	0.42	0.42	0.00	117.42
	NORMAL	115.0	0.18	186.94	115.00	-0.21	0.31	-0.30	1.07	-0.55	224.26	149.57
	NORMAL	145.0	0.53	350.60	145.00	-0.12	0.28	-0.21	2.35	1.17	545.53	167.78
	NORMAL	179.0	0.79	349.28	179.00	0.27	0.21	0.18	0.77	0.76	-3.88	355.99
	NORMAL	209.0	0.53	351.56	208.99	0.61	0.15	0.52	0.87	-0.87	7.60	175.37
	NORMAL	240.0	1.58	17.58	239.99	1.16	0.26	1.00	3.64	3.39	83.94	37.91
	NORMAL	270.0	1.94	356.40	269.98	2.06	0.35	1.82	2.46	1.20	-70.60	288.10
	NORMAL	300.0	3.08	358.07	299.95	3.37	0.29	3.07	3.81	3.80	5.57	4.51
	NORMAL	331.0	3.61	6.59	330.89	5.17	0.38	4.74	2.34	1.71	27.48	47.47
	NORMAL	361.0	4.40	3.78	360.82	7.26	0.56	6.64	2.71	2.63	-9.37	344.64
	NORMAL	392.0	5.28	357.71	391.71	9.87	0.58	9.09	3.28	2.84	-19.58	326.75
	NORMAL	423.0	6.69	356.57	422.54	13.10	0.42	12.18	4.56	4.55	-3.68	354.61
	NORMAL	453.0	7.13	349.63	452.32	16.67	-0.02	15.69	3.14	1.47	-23.13	294.31
	NORMAL	483.0	7.65	352.27	482.07	20.48	-0.63	19.48	2.07	1.73	8.80	34.46
	NORMAL	514.0	8.45	348.93	512.77	24.76	-1.34	23.75	2.99	2.58	-10.77	328.03
	NORMAL	544.0	8.62	350.24	542.43	29.14	-2.15	28.14	0.86	0.57	4.37	49.48
	NORMAL	555.0	8.46	351.36	553.31	30.75	-2.41	29.74	2.10	-1.45	10.18	134.44
	NORMAL	586.0	9.00	351.70	583.95	35.41	-3.10	34.36	1.75	1.74	1.10	5.63
	NORMAL	616.0	9.64	351.94	613.56	40.22	-3.79	39.11	2.14	2.13	0.80	3.59
	NORMAL	646.0	10.34	352.05	643.10	45.37	-4.52	44.21	2.33	2.33	0.37	1.62

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 (°)
4/18/2011	NORMAL	677.0	11.04	355.83	673.56	51.09	-5.12	49.79	3.19	2.26	12.19	46.92
	NORMAL	707.0	11.53	357.13	702.98	56.95	-5.48	55.42	1.84	1.63	4.33	28.08
	NORMAL	737.0	12.33	355.64	732.34	63.13	-5.87	61.38	2.86	2.67	-4.97	338.21
	NORMAL	768.0	12.71	358.42	762.60	69.84	-6.21	67.80	2.30	1.23	8.97	59.13
	NORMAL	798.0	13.38	356.26	791.83	76.61	-6.53	74.27	2.76	2.23	-7.20	322.90
	NORMAL	828.0	13.60	355.20	821.00	83.58	-7.05	81.01	1.10	0.73	-3.53	311.14
	NORMAL	859.0	13.81	355.43	851.11	90.90	-7.65	88.10	0.70	0.68	0.74	14.66
	NORMAL	889.0	14.15	357.61	880.23	98.14	-8.09	95.05	2.09	1.13	7.27	58.22
	NORMAL	920.0	14.92	357.19	910.23	105.91	-8.45	102.48	2.51	2.48	-1.35	352.00
	NORMAL	950.0	15.08	354.46	939.21	113.65	-9.01	109.96	2.41	0.53	-9.10	281.44
	NORMAL	981.0	15.69	356.38	969.10	121.85	-9.67	117.89	2.56	1.97	6.19	40.79
	NORMAL	1,011.0	16.23	356.07	997.94	130.08	-10.21	125.82	1.82	1.80	-1.03	350.88
	NORMAL	1,042.0	16.89	353.86	1,027.66	138.88	-10.99	134.36	2.94	2.13	-7.13	315.27
	NORMAL	1,073.0	17.86	353.71	1,057.24	148.08	-11.99	143.36	3.13	3.13	-0.48	357.28
	NORMAL	1,089.0	18.06	353.77	1,072.46	152.99	-12.53	148.15	1.26	1.25	0.38	5.31
4/19/2011	NORMAL	1,143.0	18.06	353.77	1,123.80	169.63	-14.34	164.42	0.00	0.00	0.00	0.00
	NORMAL	1,166.0	19.17	354.46	1,145.44	177.44	-15.04	172.00	1.47	1.44	0.90	11.55
	NORMAL	1,261.0	20.76	353.00	1,234.72	209.67	-18.60	203.53	1.75	1.67	-1.54	341.90
	NORMAL	1,356.0	19.69	353.08	1,323.87	242.27	-22.58	235.55	1.13	-1.13	0.08	178.56
	NORMAL	1,452.0	18.28	357.19	1,414.64	273.37	-25.27	265.71	2.02	-1.47	4.28	138.45
	NORMAL	1,547.0	18.73	358.25	1,504.73	303.50	-26.47	294.45	0.59	0.47	1.12	37.29
	NORMAL	1,643.0	19.40	353.23	1,595.47	334.74	-28.82	324.63	1.84	0.70	-5.23	289.84
	NORMAL	1,738.0	20.02	346.75	1,684.92	366.24	-34.40	356.16	2.39	0.65	-6.82	282.77
	NORMAL	1,833.0	20.14	340.28	1,774.15	397.47	-43.65	388.67	2.34	0.13	-6.81	270.05
	NORMAL	1,929.0	19.90	332.52	1,864.37	427.52	-56.77	421.40	2.78	-0.25	-8.08	261.20
	NORMAL	2,024.0	19.22	331.13	1,953.89	455.56	-71.78	452.87	0.87	-0.72	-1.46	213.73
	NORMAL	2,119.0	18.41	332.56	2,043.81	482.57	-86.24	483.18	0.98	-0.85	1.51	151.02
	NORMAL	2,215.0	18.27	335.07	2,134.94	509.67	-99.57	513.20	0.84	-0.15	2.61	101.24
	NORMAL	2,310.0	19.02	336.96	2,224.95	537.42	-111.91	543.49	1.01	0.79	1.99	39.75
	NORMAL	2,405.0	20.64	338.96	2,314.31	567.29	-123.98	575.68	1.85	1.71	2.11	23.67
4/20/2011	NORMAL	2,501.0	19.89	336.95	2,404.37	598.11	-136.45	608.91	1.07	-0.78	-2.09	221.93
	NORMAL	2,596.0	18.14	334.96	2,494.19	626.38	-149.03	639.77	1.96	-1.84	-2.09	199.39
	NORMAL	2,692.0	16.73	333.21	2,585.77	652.26	-161.59	668.37	1.57	-1.47	-1.82	199.57
	NORMAL	2,787.0	16.22	337.57	2,676.88	676.73	-172.81	695.20	1.41	-0.54	4.59	114.49
	NORMAL	2,882.0	17.33	339.70	2,767.83	702.27	-182.78	722.61	1.34	1.17	2.24	30.00
	NORMAL	2,978.0	16.71	340.23	2,859.63	728.66	-192.41	750.71	0.67	-0.65	0.55	166.21
	NORMAL	3,073.0	18.34	339.46	2,950.22	755.51	-202.28	779.31	1.73	1.72	-0.81	351.54
	NORMAL	3,168.0	19.21	336.89	3,040.16	783.89	-213.66	809.86	1.26	0.92	-2.71	315.22
	NORMAL	3,264.0	19.23	335.08	3,130.81	812.75	-226.52	841.38	0.62	0.02	-1.89	271.07
	NORMAL	3,359.0	18.17	331.90	3,220.80	840.01	-240.09	871.62	1.55	-1.12	-3.35	222.39
	NORMAL	3,455.0	18.37	330.72	3,311.96	866.40	-254.53	901.36	0.44	0.21	-1.23	297.84
	NORMAL	3,550.0	18.27	333.30	3,402.15	892.76	-268.55	930.91	0.86	-0.11	2.72	98.25
	NORMAL	3,645.0	18.20	334.81	3,492.38	919.49	-281.55	960.47	0.50	-0.07	1.59	99.14
	NORMAL	3,741.0	18.86	335.55	3,583.40	947.18	-294.36	990.86	0.73	0.69	0.77	19.96
	NORMAL	3,836.0	19.79	336.60	3,673.04	975.92	-307.10	1,022.22	1.05	0.98	1.11	20.98
	NORMAL	3,931.0	19.37	335.27	3,762.55	1,004.99	-320.08	1,053.96	0.64	-0.44	-1.40	226.08
	NORMAL	4,027.0	19.07	336.51	3,853.20	1,033.84	-332.99	1,085.48	0.53	-0.31	1.29	126.90
	NORMAL	4,122.0	18.34	337.54	3,943.18	1,061.88	-344.88	1,115.90	0.84	-0.77	1.08	156.14
	NORMAL	4,217.0	19.03	338.86	4,033.18	1,090.14	-356.18	1,146.31	0.85	0.73	1.39	32.13
	NORMAL	4,313.0	20.54	339.27	4,123.51	1,120.49	-367.79	1,178.80	1.58	1.57	0.43	5.44
	NORMAL	4,408.0	20.23	338.28	4,212.56	1,151.34	-379.76	1,211.88	0.49	-0.33	-1.04	227.58
	NORMAL	4,504.0	19.78	336.72	4,302.76	1,181.68	-392.33	1,244.69	0.73	-0.47	-1.63	229.13
	NORMAL	4,599.0	19.31	334.95	4,392.29	1,210.67	-405.33	1,276.37	0.80	-0.49	-1.86	230.73
4/21/2011	NORMAL	4,694.0	17.88	335.74	4,482.33	1,238.20	-417.97	1,306.56	1.53	-1.51	0.83	170.38
	NORMAL	4,790.0	17.89	338.52	4,573.69	1,265.36	-429.43	1,335.99	0.89	0.01	2.90	90.65
	NORMAL	4,885.0	17.45	340.88	4,664.21	1,292.39	-439.44	1,364.82	0.88	-0.46	2.48	122.68
	NORMAL	4,980.0	18.61	341.71	4,754.54	1,320.25	-448.86	1,394.22	1.25	1.22	0.87	12.88

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 (°)
4/21/2011	NORMAL	5,076.0	17.70	341.49	4,845.76	1,348.63	-458.30	1,424.12	0.95	-0.95	-0.23	184.20
	NORMAL	5,171.0	17.59	340.81	4,936.30	1,375.88	-467.60	1,452.91	0.25	-0.12	-0.72	241.59
	NORMAL	5,267.0	18.75	338.74	5,027.51	1,403.96	-477.97	1,482.84	1.38	1.21	-2.16	329.92
	NORMAL	5,362.0	18.59	336.00	5,117.51	1,432.02	-489.66	1,513.21	0.94	-0.17	-2.88	258.37
	NORMAL	5,457.0	17.36	333.75	5,207.87	1,458.57	-502.09	1,542.40	1.49	-1.29	-2.37	208.38
	NORMAL	5,553.0	15.12	330.13	5,300.04	1,482.28	-514.66	1,568.97	2.56	-2.33	-3.77	202.59
	NORMAL	5,648.0	14.21	328.59	5,391.94	1,502.97	-526.91	1,592.59	1.04	-0.96	-1.62	202.45
	NORMAL	5,743.0	12.38	329.56	5,484.39	1,521.71	-538.15	1,614.03	1.94	-1.93	1.02	173.52
	NORMAL	5,839.0	11.57	333.60	5,578.31	1,539.20	-547.64	1,633.71	1.21	-0.84	4.21	135.98
	NORMAL	5,937.0	11.25	336.48	5,674.37	1,556.77	-555.83	1,653.01	0.67	-0.33	2.94	120.73
4/22/2011	NORMAL	6,032.0	9.85	338.76	5,767.76	1,572.84	-562.47	1,670.38	1.54	-1.47	2.40	164.51
	NORMAL	6,127.0	9.11	343.57	5,861.46	1,587.63	-567.54	1,686.01	1.14	-0.78	5.06	135.40
	NORMAL	6,223.0	8.88	341.98	5,956.28	1,601.97	-571.98	1,701.01	0.35	-0.24	-1.66	226.44
	NORMAL	6,318.0	8.72	344.35	6,050.17	1,615.87	-576.19	1,715.52	0.42	-0.17	2.49	114.98
	NORMAL	6,414.0	8.28	349.96	6,145.11	1,629.69	-579.36	1,729.59	0.98	-0.46	5.84	120.71
	NORMAL	6,509.0	6.49	350.52	6,239.32	1,641.72	-581.44	1,741.61	1.89	-1.88	0.59	177.97
	NORMAL	6,604.0	4.83	347.04	6,333.86	1,650.91	-583.22	1,750.86	1.78	-1.75	-3.66	189.95
	NORMAL	6,700.0	1.99	338.54	6,429.68	1,656.40	-584.74	1,756.54	3.00	-2.96	-8.85	185.87
4/23/2011	NORMAL	6,795.0	0.98	315.68	6,524.64	1,658.52	-585.91	1,758.93	1.21	-1.06	-24.06	199.30
	NORMAL	6,890.0	1.03	325.81	6,619.63	1,659.81	-586.95	1,760.50	0.19	0.05	10.66	79.39
	NORMAL	6,986.0	0.82	295.33	6,715.62	1,660.82	-588.06	1,761.82	0.55	-0.22	-31.75	232.14
	NORMAL	7,081.0	0.36	324.66	6,810.61	1,661.35	-588.85	1,762.59	0.56	-0.48	30.87	160.79
	NORMAL	7,177.0	0.56	300.83	6,906.61	1,661.84	-589.42	1,763.24	0.28	0.21	-24.82	303.94
	NORMAL	7,272.0	0.17	303.76	7,001.61	1,662.15	-589.94	1,763.71	0.41	-0.41	3.08	178.72
	NORMAL	7,367.0	1.25	215.10	7,096.60	1,661.38	-590.65	1,763.23	1.32	1.14	-93.33	263.57
	NORMAL	7,463.0	1.45	192.26	7,192.57	1,659.34	-591.51	1,761.60	0.59	0.21	-23.79	278.72
	NORMAL	7,558.0	0.20	243.98	7,287.56	1,658.09	-591.92	1,760.57	1.41	-1.32	54.44	173.25
	NORMAL	7,653.0	0.69	341.92	7,382.56	1,658.56	-592.24	1,761.12	0.78	0.52	103.09	113.37
	NORMAL	7,749.0	0.75	318.90	7,478.55	1,659.59	-592.84	1,762.28	0.31	0.06	-23.98	270.06
	NORMAL	7,844.0	1.54	311.49	7,573.53	1,660.90	-594.20	1,763.98	0.84	0.83	-7.80	345.67
	NORMAL	7,939.0	1.56	273.51	7,668.50	1,661.82	-596.45	1,765.62	1.06	0.02	-39.98	252.09
	NORMAL	8,035.0	1.28	274.45	7,764.47	1,661.99	-598.82	1,766.58	0.29	-0.29	0.98	175.71
4/25/2011	NORMAL	8,130.0	1.82	271.29	7,859.44	1,662.10	-601.39	1,767.56	0.58	0.57	-3.33	349.42
	NORMAL	8,226.0	2.40	283.62	7,955.37	1,662.61	-604.87	1,769.22	0.76	0.60	12.84	44.32
	NORMAL	8,321.0	2.42	282.32	8,050.29	1,663.51	-608.76	1,771.38	0.06	0.02	-1.37	289.45
	NORMAL	8,417.0	1.76	272.93	8,146.22	1,664.02	-612.21	1,773.03	0.77	-0.69	-9.78	202.78
	NORMAL	8,512.0	1.15	277.20	8,241.19	1,664.21	-614.61	1,774.03	0.65	-0.64	4.49	172.05
	NORMAL	8,607.0	1.21	263.75	8,336.17	1,664.22	-616.56	1,774.70	0.30	0.06	-14.16	275.44
	NORMAL	8,703.0	1.41	240.77	8,432.15	1,663.53	-618.59	1,774.74	0.58	0.21	-23.94	279.10
	NORMAL	8,798.0	1.67	233.30	8,527.11	1,662.14	-620.72	1,774.15	0.35	0.27	-7.86	318.55
	NORMAL	8,893.0	3.20	220.50	8,622.02	1,659.29	-623.56	1,772.44	1.70	1.61	-13.47	333.96
	NORMAL	8,918.0	3.38	219.59	8,646.98	1,658.19	-624.48	1,771.72	0.75	0.72	-3.64	343.37
	NORMAL	8,970.0	3.38	219.59	8,698.89	1,655.83	-626.43	1,770.16	0.00	0.00	0.00	0.00