

1 General

1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

1.2 Well Information

Well	PA 443-20	Wellbore No.	OH
Well Name	PA 443-20	Common Name	PA 443-20
Project	PA 20-06S-095W	Site	DOE 1-W-20 Pad
Vertical Section Azimuth	16.01 (°)	North Reference	True
Origin N/S		Origin E/W	
Spud Date	8/3/2011	UWI	PA 443-20
Active Datum	KB @6,255.5ft (above Mean Sea Level)		

2 Survey Name

2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	
Date Started	8/3/2011	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 (°)
8/3/2011	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/3/2011	NORMAL	82.0	0.35	72.95	82.00	0.07	0.24	0.14	0.43	0.43	0.00	72.95
	NORMAL	176.0	1.58	42.19	175.98	1.12	1.38	1.46	1.37	1.31	-32.72	321.28
	NORMAL	267.0	3.87	18.28	266.88	4.96	3.19	5.65	2.76	2.52	-26.27	321.32
	NORMAL	339.0	6.60	14.16	338.57	11.28	4.97	12.22	3.83	3.79	-5.72	350.10
	NORMAL	430.0	10.07	15.61	428.60	24.02	8.39	25.40	3.82	3.81	1.59	4.18
	NORMAL	521.0	12.39	16.06	517.85	41.07	13.23	43.12	2.55	2.55	0.49	2.38
	NORMAL	612.0	15.25	15.21	606.20	62.00	19.07	64.86	3.15	3.14	-0.93	355.53
	NORMAL	703.0	18.32	16.01	693.32	87.30	26.16	91.13	3.38	3.37	0.88	4.69
	NORMAL	794.0	21.67	16.32	778.82	117.18	34.82	122.24	3.68	3.68	0.34	1.96
	NORMAL	870.0	21.79	18.28	849.42	144.04	43.19	150.37	0.97	0.16	2.58	81.52
8/4/2011	NORMAL	978.0	21.86	16.50	949.68	182.36	55.19	190.51	0.62	0.06	-1.65	275.21
	NORMAL	1,074.0	21.60	6.74	1,038.89	217.05	62.34	225.83	3.77	-0.27	-10.17	261.36
	NORMAL	1,168.0	21.67	16.57	1,126.29	250.88	69.32	260.27	3.85	0.07	10.46	93.47
	NORMAL	1,263.0	20.28	13.39	1,215.00	283.71	78.14	294.26	1.89	-1.46	-3.35	217.84
	NORMAL	1,359.0	17.71	10.39	1,305.77	314.26	84.63	325.42	2.86	-2.68	-3.13	199.39
	NORMAL	1,454.0	18.09	15.16	1,396.17	342.71	91.09	354.55	1.59	0.40	5.02	77.75
	NORMAL	1,549.0	18.31	18.29	1,486.42	371.12	99.63	384.20	1.05	0.23	3.29	78.81
	NORMAL	1,644.0	18.21	16.10	1,576.64	399.55	108.43	413.96	0.73	-0.11	-2.31	260.67
	NORMAL	1,740.0	18.35	17.43	1,667.80	428.38	117.12	444.07	0.46	0.15	1.39	72.08
	NORMAL	1,835.0	19.97	20.01	1,757.53	457.89	127.15	475.20	1.92	1.71	2.72	28.82

2.1.2 Survey Stations (Continued)

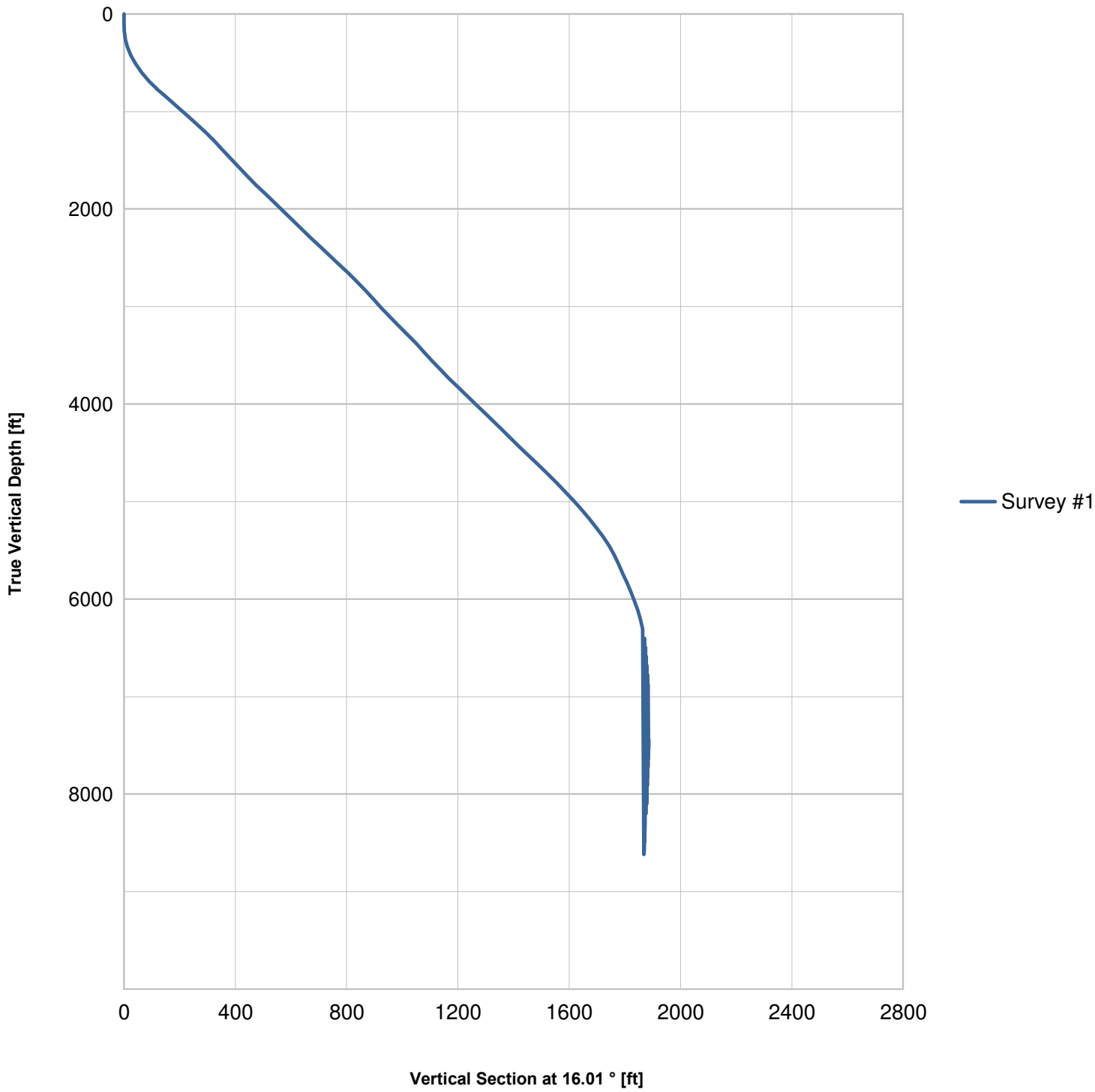
Date	Type	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLS (°/100ft)	Build Rate (°/100ft)	Turn (°/100ft)	TFace (°)
8/4/2011	NORMAL	1,931.0	20.36	19.28	1,847.65	489.06	138.27	508.23	0.48	0.41	-0.76	326.82
8/5/2011	NORMAL	2,026.0	20.36	17.33	1,936.71	520.44	148.65	541.25	0.71	0.00	-2.05	269.09
	NORMAL	2,121.0	19.95	16.39	2,025.90	551.76	158.15	573.98	0.55	-0.43	-0.99	217.87
	NORMAL	2,217.0	19.66	17.30	2,116.22	582.89	167.57	606.50	0.44	-0.30	0.95	133.67
	NORMAL	2,312.0	19.83	16.21	2,205.63	613.62	176.82	638.59	0.43	0.18	-1.15	294.27
	NORMAL	2,408.0	19.92	16.80	2,295.92	644.91	186.09	671.23	0.23	0.09	0.61	66.11
	NORMAL	2,503.0	20.55	15.93	2,385.05	676.44	195.35	704.08	0.73	0.66	-0.92	334.06
	NORMAL	2,599.0	20.87	13.34	2,474.85	709.28	203.92	738.01	1.01	0.33	-2.70	288.04
	NORMAL	2,694.0	20.49	14.15	2,563.73	741.87	211.89	771.53	0.50	-0.40	0.85	143.51
	NORMAL	2,790.0	20.03	14.76	2,653.79	774.06	220.18	804.77	0.53	-0.48	0.64	155.52
	NORMAL	2,885.0	19.35	15.02	2,743.23	804.99	228.41	836.77	0.72	-0.72	0.27	172.78
	NORMAL	2,981.0	18.06	15.84	2,834.16	834.67	236.59	867.55	1.37	-1.34	0.85	168.87
	NORMAL	3,077.0	17.15	15.86	2,925.66	862.60	244.52	896.59	0.95	-0.95	0.02	179.63
	NORMAL	3,172.0	17.92	17.43	3,016.25	890.02	252.73	925.20	0.95	0.81	1.65	32.31
	NORMAL	3,267.0	19.17	17.87	3,106.32	918.81	261.89	955.41	1.32	1.32	0.46	6.60
	NORMAL	3,363.0	19.41	17.02	3,196.93	949.07	271.40	987.11	0.38	0.25	-0.89	310.12
	NORMAL	3,458.0	19.32	16.33	3,286.55	979.24	280.43	1,018.61	0.26	-0.09	-0.73	248.20
	NORMAL	3,553.0	18.15	15.01	3,376.52	1,008.62	288.69	1,049.12	1.31	-1.23	-1.39	199.30
	NORMAL	3,649.0	17.29	14.22	3,467.96	1,036.89	296.06	1,078.33	0.93	-0.90	-0.82	195.24
	NORMAL	3,745.0	17.86	15.55	3,559.48	1,064.90	303.51	1,107.31	0.73	0.59	1.39	35.80
	NORMAL	3,839.0	18.69	15.51	3,648.74	1,093.30	311.41	1,136.78	0.88	0.88	-0.04	359.12
	NORMAL	3,935.0	19.75	14.32	3,739.39	1,123.84	319.53	1,168.38	1.18	1.10	-1.24	339.15
8/6/2011	NORMAL	4,030.0	20.00	15.18	3,828.73	1,155.07	327.75	1,200.66	0.40	0.26	0.91	49.87
	NORMAL	4,125.0	19.83	13.86	3,918.05	1,186.39	335.87	1,233.01	0.51	-0.18	-1.39	248.67
	NORMAL	4,220.0	20.21	14.11	4,007.31	1,217.95	343.73	1,265.51	0.41	0.40	0.26	12.81
	NORMAL	4,316.0	20.01	14.81	4,097.45	1,249.91	351.97	1,298.51	0.33	-0.21	0.73	130.05
	NORMAL	4,412.0	19.68	14.77	4,187.75	1,281.42	360.29	1,331.09	0.34	-0.34	-0.04	182.34
	NORMAL	4,507.0	19.62	13.96	4,277.22	1,312.37	368.22	1,363.02	0.29	-0.06	-0.85	257.20
	NORMAL	4,603.0	19.91	16.37	4,367.57	1,343.69	376.71	1,395.48	0.90	0.30	2.51	71.55
	NORMAL	4,698.0	19.92	15.37	4,456.89	1,374.82	385.56	1,427.83	0.36	0.01	-1.05	271.21
	NORMAL	4,794.0	20.18	17.97	4,547.07	1,406.34	395.00	1,460.74	0.97	0.27	2.71	74.79
	NORMAL	4,889.0	20.46	16.97	4,636.16	1,437.81	404.91	1,493.72	0.47	0.29	-1.05	308.11
	NORMAL	4,985.0	19.49	18.38	4,726.38	1,469.06	414.85	1,526.50	1.13	-1.01	1.47	154.25
	NORMAL	5,081.0	18.72	18.41	4,817.09	1,498.87	424.77	1,557.89	0.80	-0.80	0.03	179.28
	NORMAL	5,176.0	18.64	17.08	4,907.09	1,527.85	434.04	1,588.30	0.46	-0.08	-1.40	258.73
	NORMAL	5,271.0	18.10	16.95	4,997.25	1,556.48	442.80	1,618.24	0.57	-0.57	-0.14	184.28
	NORMAL	5,367.0	16.35	18.65	5,088.94	1,583.55	451.47	1,646.65	1.90	-1.82	1.77	164.76
	NORMAL	5,462.0	15.49	18.15	5,180.29	1,608.27	459.70	1,672.68	0.92	-0.91	-0.53	188.82
	NORMAL	5,557.0	15.23	17.62	5,271.90	1,632.22	467.43	1,697.83	0.31	-0.27	-0.56	208.11
	NORMAL	5,653.0	13.95	16.07	5,364.80	1,655.36	474.45	1,722.01	1.39	-1.33	-1.61	196.21
	NORMAL	5,748.0	11.82	18.92	5,457.41	1,675.57	480.78	1,743.18	2.34	-2.24	3.00	164.77
	NORMAL	5,843.0	10.25	17.53	5,550.65	1,692.83	486.48	1,761.35	1.68	-1.65	-1.46	188.94
	NORMAL	5,939.0	9.16	16.38	5,645.27	1,708.31	491.20	1,777.53	1.15	-1.14	-1.20	189.52
	NORMAL	6,034.0	9.27	17.58	5,739.05	1,722.86	495.65	1,792.74	0.23	0.12	1.26	60.81
	NORMAL	6,129.0	8.77	14.60	5,832.87	1,737.16	499.78	1,807.63	0.72	-0.53	-3.14	221.59
	NORMAL	6,225.0	7.60	11.75	5,927.89	1,750.46	502.92	1,821.27	1.29	-1.22	-2.97	197.72
	NORMAL	6,320.0	7.98	13.75	6,022.02	1,763.02	505.77	1,834.13	0.49	0.40	2.11	36.50
8/7/2011	NORMAL	6,415.0	6.89	11.54	6,116.22	1,775.01	508.48	1,846.40	1.19	-1.15	-2.33	193.61
	NORMAL	6,511.0	4.73	13.22	6,211.72	1,784.50	510.53	1,856.09	2.26	-2.25	1.75	176.33
	NORMAL	6,606.0	3.88	14.00	6,306.45	1,791.43	512.21	1,863.22	0.90	-0.89	0.82	176.45
	NORMAL	6,701.0	3.64	19.76	6,401.24	1,797.39	514.00	1,869.44	0.47	-0.25	6.06	125.28
	NORMAL	6,795.0	2.04	43.50	6,495.13	1,801.41	516.16	1,873.90	2.08	-1.70	25.26	155.14
	NORMAL	6,889.0	1.74	9.74	6,589.08	1,804.03	517.56	1,876.81	1.21	-0.32	-35.91	238.47
	NORMAL	6,984.0	1.04	350.21	6,684.05	1,806.30	517.66	1,879.02	0.88	-0.74	-20.56	204.59
8/8/2011	NORMAL	7,078.0	1.50	344.21	6,778.03	1,808.33	517.18	1,880.83	0.51	0.49	-6.38	340.86
	NORMAL	7,173.0	1.11	324.32	6,873.00	1,810.27	516.30	1,882.46	0.62	-0.41	-20.94	219.62
	NORMAL	7,267.0	0.82	259.73	6,966.99	1,810.89	515.11	1,882.72	1.13	-0.31	-68.71	224.34

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 (°)
8/8/2011	NORMAL	7,362.0	1.36	243.74	7,061.98	1,810.27	513.43	1,881.66	0.65	0.57	-16.83	322.45
	NORMAL	7,457.0	0.78	273.78	7,156.96	1,809.82	511.77	1,880.77	0.83	-0.61	31.62	150.31
	NORMAL	7,552.0	1.40	21.81	7,251.95	1,810.94	511.56	1,881.79	1.90	0.65	113.72	132.34
	NORMAL	7,647.0	0.93	32.09	7,346.93	1,812.67	512.40	1,883.68	0.54	-0.49	10.82	161.11
	NORMAL	7,742.0	0.66	59.58	7,441.92	1,813.60	513.28	1,884.82	0.48	-0.28	28.94	138.51
	NORMAL	7,837.0	0.37	165.54	7,536.92	1,813.58	513.83	1,884.95	0.88	-0.31	111.54	154.97
	NORMAL	7,932.0	0.93	188.00	7,631.91	1,812.52	513.80	1,883.92	0.64	0.59	23.64	35.97
8/9/2011	NORMAL	8,027.0	0.98	194.13	7,726.90	1,810.96	513.49	1,882.35	0.12	0.05	6.45	67.01
	NORMAL	8,122.0	0.92	221.09	7,821.89	1,809.60	512.79	1,880.84	0.47	-0.06	28.38	110.98
	NORMAL	8,217.0	0.44	255.57	7,916.88	1,808.94	511.94	1,879.97	0.64	-0.51	36.29	155.92
	NORMAL	8,312.0	1.38	229.12	8,011.87	1,808.10	510.72	1,878.83	1.06	0.99	-27.84	322.31
	NORMAL	8,408.0	1.08	219.40	8,107.84	1,806.64	509.27	1,877.03	0.38	-0.31	-10.13	210.02
	NORMAL	8,503.0	1.62	205.87	8,202.82	1,804.74	508.12	1,874.88	0.66	0.57	-14.24	322.57
	NORMAL	8,599.0	1.06	213.38	8,298.79	1,802.78	507.04	1,872.70	0.61	-0.58	7.82	166.32
8/10/2011	NORMAL	8,694.0	0.85	270.39	8,393.78	1,802.05	505.85	1,871.67	0.98	-0.22	60.01	129.95
	NORMAL	8,790.0	1.34	243.35	8,489.76	1,801.55	504.13	1,870.72	0.73	0.51	-28.17	299.56
	NORMAL	8,867.0	1.73	238.50	8,566.73	1,800.54	502.33	1,869.25	0.53	0.50	-6.30	338.99
	NORMAL	8,919.0	1.73	238.50	8,618.71	1,799.72	500.99	1,868.09	0.00	0.00	0.00	0.00

3 Charts

3.1 Vertical Section View



3.2 Plan View

