

1 General

1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

1.2 Well Information

Well	PA 33-20	Wellbore No.	OH
Well Name	PA 33-20	Common Name	PA 33-20
Project	PA 20-06S-095W	Site	DOE 1-W-20 Pad
Vertical Section Azimuth	322.17 (°)	North Reference	True
Origin N/S		Origin E/W	
Spud Date	8/12/2011	UWI	PA 33-20
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	8/11/2011	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 (°)
8/11/2011	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/12/2011	NORMAL	80.0	0.53	328.54	80.00	0.32	-0.19	0.37	0.66	0.66	0.00	328.54
	NORMAL	113.0	0.88	328.10	113.00	0.66	-0.41	0.77	1.06	1.06	-1.33	358.89
	NORMAL	143.0	1.76	329.33	142.99	1.25	-0.76	1.46	2.93	2.93	4.10	2.46
	NORMAL	174.0	2.64	315.70	173.97	2.17	-1.50	2.64	3.28	2.84	-43.97	322.34
	NORMAL	204.0	3.43	319.83	203.92	3.35	-2.57	4.22	2.73	2.63	13.77	17.54
	NORMAL	235.0	4.31	329.15	234.85	5.06	-3.76	6.31	3.48	2.84	30.06	40.27
	NORMAL	265.0	5.10	323.53	264.75	7.10	-5.13	8.76	3.05	2.63	-18.73	326.91
	NORMAL	278.0	5.59	325.61	277.69	8.09	-5.83	9.97	4.05	3.77	16.00	22.61
	NORMAL	308.0	6.43	325.95	307.53	10.69	-7.60	13.10	2.80	2.80	1.13	2.60
	NORMAL	339.0	7.20	324.84	338.31	13.71	-9.69	16.77	2.52	2.48	-3.58	349.74
	NORMAL	369.0	8.01	323.15	368.05	16.92	-12.03	20.74	2.80	2.70	-5.63	343.73
	NORMAL	400.0	8.86	323.02	398.71	20.56	-14.76	25.29	2.74	2.74	-0.42	358.65
	NORMAL	430.0	9.55	321.14	428.32	24.34	-17.71	30.09	2.51	2.30	-6.27	335.52
	NORMAL	460.0	10.62	319.40	457.86	28.38	-21.07	35.34	3.71	3.57	-5.80	343.25
	NORMAL	490.0	11.52	318.72	487.30	32.73	-24.84	41.09	3.03	3.00	-2.27	351.41
	NORMAL	521.0	12.52	318.11	517.62	37.56	-29.13	47.53	3.25	3.23	-1.97	352.46
	NORMAL	551.0	13.23	318.44	546.87	42.55	-33.58	54.20	2.38	2.37	1.10	6.07
	NORMAL	581.0	13.87	320.16	576.03	47.88	-38.16	61.22	2.52	2.13	5.73	33.04
	NORMAL	612.0	14.52	321.09	606.09	53.75	-42.98	68.82	2.22	2.10	3.00	19.79
	NORMAL	642.0	15.60	322.29	635.05	59.87	-47.81	76.61	3.75	3.60	4.00	16.68

2.1.2 Survey Stations (Continued)

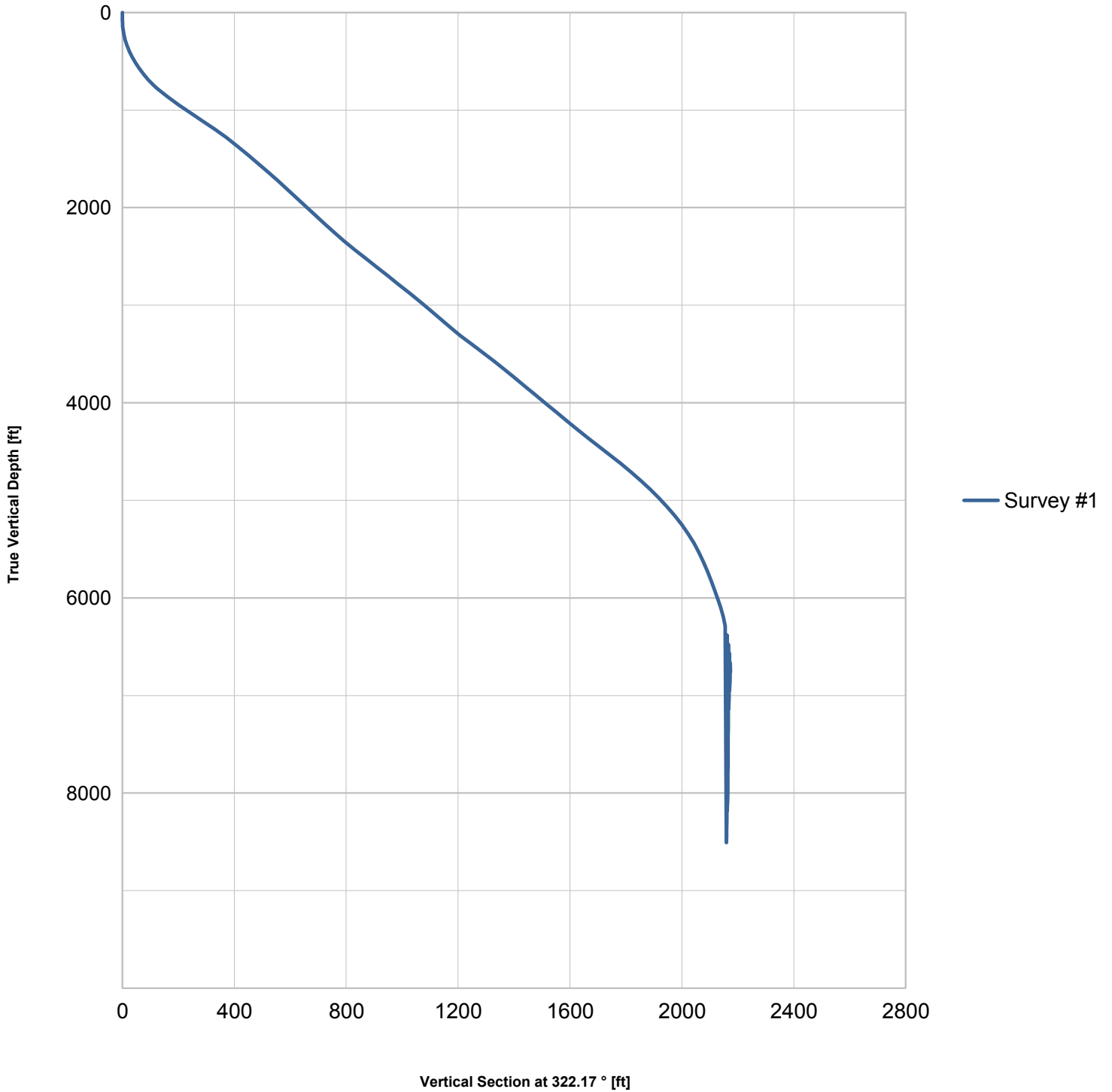
Date	Type	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLS (°/100ft)	Build Rate (°/100ft)	Turn (°/100ft)	TFace (°)
8/12/2011	NORMAL	672.0	16.69	322.96	663.87	66.50	-52.87	84.95	3.69	3.63	2.23	10.02
	NORMAL	703.0	17.59	323.23	693.49	73.81	-58.36	94.09	2.91	2.90	0.87	5.18
	NORMAL	733.0	18.89	323.83	721.99	81.36	-63.94	103.48	4.38	4.33	2.00	8.51
	NORMAL	764.0	20.55	324.62	751.17	89.85	-70.05	113.93	5.42	5.35	2.55	9.50
	NORMAL	794.0	21.90	324.16	779.13	98.68	-76.38	124.78	4.53	4.50	-1.53	352.75
	NORMAL	886.0	24.96	326.03	863.54	128.69	-97.27	161.30	3.42	3.33	2.03	14.52
	NORMAL	978.0	26.75	323.36	946.33	161.41	-120.48	201.38	2.32	1.95	-2.90	325.75
8/13/2011	NORMAL	1,070.0	26.85	323.80	1,028.45	194.78	-145.11	242.84	0.24	0.11	0.48	63.45
	NORMAL	1,164.0	28.00	321.71	1,111.88	229.24	-171.32	286.13	1.60	1.22	-2.22	319.14
	NORMAL	1,259.0	27.51	320.42	1,195.95	263.65	-199.12	330.36	0.82	-0.52	-1.36	230.23
	NORMAL	1,354.0	25.04	318.51	1,281.13	295.62	-226.42	372.36	2.75	-2.60	-2.01	198.04
	NORMAL	1,450.0	22.67	318.05	1,368.92	324.61	-252.25	411.09	2.48	-2.47	-0.48	184.28
	NORMAL	1,545.0	22.41	319.05	1,456.67	351.90	-276.35	447.44	0.49	-0.27	1.05	124.61
	NORMAL	1,640.0	22.04	319.73	1,544.61	379.18	-299.75	483.33	0.47	-0.39	0.72	145.51
	NORMAL	1,736.0	22.60	322.58	1,633.42	407.57	-322.60	519.77	1.27	0.58	2.97	63.97
	NORMAL	1,831.0	21.41	324.02	1,721.50	436.10	-343.88	555.35	1.38	-1.25	1.52	156.28
	NORMAL	1,927.0	20.29	324.51	1,811.21	463.83	-363.84	589.50	1.18	-1.17	0.51	171.38
	NORMAL	2,022.0	20.41	323.18	1,900.28	490.51	-383.33	622.52	0.50	0.13	-1.40	283.92
	NORMAL	2,117.0	20.84	324.42	1,989.19	517.51	-403.09	655.97	0.65	0.45	1.31	46.03
	NORMAL	2,212.0	20.83	324.46	2,077.98	545.00	-422.74	689.73	0.02	-0.01	0.04	125.12
8/14/2011	NORMAL	2,308.0	20.91	322.73	2,167.68	572.52	-443.03	723.92	0.65	0.08	-1.80	276.59
	NORMAL	2,404.0	21.30	323.98	2,257.24	600.26	-463.66	758.47	0.62	0.41	1.30	49.68
	NORMAL	2,499.0	22.38	324.11	2,345.42	628.86	-484.41	793.80	1.14	1.14	0.14	2.62
	NORMAL	2,595.0	23.58	324.71	2,433.80	659.34	-506.22	831.25	1.27	1.25	0.63	11.32
	NORMAL	2,690.0	24.43	322.20	2,520.59	690.38	-529.24	869.88	1.40	0.89	-2.64	308.62
	NORMAL	2,786.0	23.84	318.69	2,608.20	720.64	-554.21	909.10	1.62	-0.61	-3.66	246.06
	NORMAL	2,881.0	23.50	319.99	2,695.21	749.57	-579.06	947.19	0.66	-0.36	1.37	123.68
	NORMAL	2,976.0	24.06	320.97	2,782.14	779.12	-603.44	985.47	0.72	0.59	1.03	35.66
	NORMAL	3,072.0	23.54	320.95	2,869.98	809.21	-627.84	1,024.21	0.54	-0.54	-0.02	180.88
	NORMAL	3,168.0	22.79	320.36	2,958.24	838.41	-651.78	1,061.96	0.82	-0.78	-0.61	196.92
	NORMAL	3,263.0	22.23	322.52	3,046.00	866.84	-674.45	1,098.32	1.05	-0.59	2.27	125.10
	NORMAL	3,359.0	22.22	323.66	3,134.87	895.88	-696.26	1,134.62	0.45	-0.01	1.19	91.86
	NORMAL	3,454.0	22.15	325.31	3,222.84	925.07	-717.09	1,170.46	0.66	-0.07	1.74	97.17
	NORMAL	3,549.0	23.96	325.16	3,310.25	955.63	-738.31	1,207.61	1.91	1.91	-0.16	358.07
	NORMAL	3,645.0	25.26	323.94	3,397.53	988.19	-761.50	1,247.55	1.45	1.35	-1.27	338.10
	NORMAL	3,740.0	24.75	321.93	3,483.62	1,020.23	-785.70	1,287.70	1.04	-0.54	-2.12	238.12
	NORMAL	3,835.0	24.25	321.51	3,570.07	1,051.16	-810.10	1,327.09	0.56	-0.53	-0.44	199.01
	NORMAL	3,930.0	23.16	321.81	3,657.05	1,081.11	-833.79	1,365.28	1.15	-1.15	0.32	173.82
	NORMAL	4,026.0	22.91	322.75	3,745.40	1,110.83	-856.78	1,402.85	0.46	-0.26	0.98	124.64
	NORMAL	4,121.0	22.94	323.60	3,832.89	1,140.45	-878.96	1,439.85	0.35	0.03	0.89	85.21
	NORMAL	4,216.0	23.14	322.77	3,920.32	1,170.21	-901.24	1,477.02	0.40	0.21	-0.87	301.24
	NORMAL	4,312.0	22.73	321.66	4,008.73	1,199.78	-924.15	1,514.43	0.62	-0.43	-1.16	226.02
	NORMAL	4,407.0	22.38	322.21	4,096.46	1,228.46	-946.62	1,550.87	0.43	-0.37	0.58	149.17
	NORMAL	4,503.0	23.24	321.76	4,184.95	1,257.78	-969.54	1,588.08	0.91	0.90	-0.47	348.33
	NORMAL	4,598.0	23.68	321.72	4,272.10	1,287.48	-992.96	1,625.90	0.46	0.46	-0.04	357.91
	NORMAL	4,694.0	23.96	322.02	4,359.92	1,317.98	-1,016.90	1,664.67	0.32	0.29	0.31	23.54
	NORMAL	4,789.0	23.73	319.62	4,446.82	1,347.75	-1,041.16	1,703.06	1.05	-0.24	-2.53	255.57
	NORMAL	4,885.0	24.47	320.83	4,534.45	1,377.88	-1,066.23	1,742.23	0.93	0.77	1.26	34.28
	NORMAL	4,981.0	23.45	322.53	4,622.18	1,408.45	-1,090.41	1,781.21	1.28	-1.06	1.77	146.68
	NORMAL	5,076.0	22.22	323.08	4,709.73	1,437.82	-1,112.70	1,818.08	1.31	-1.29	0.58	170.41
8/15/2011	NORMAL	5,172.0	21.08	324.65	4,798.96	1,466.41	-1,133.59	1,853.48	1.33	-1.19	1.64	153.79
	NORMAL	5,267.0	20.14	323.28	4,887.87	1,493.45	-1,153.26	1,886.90	1.11	-0.99	-1.44	206.52
	NORMAL	5,363.0	18.21	323.30	4,978.54	1,518.73	-1,172.10	1,918.42	2.01	-2.01	0.02	179.81
	NORMAL	5,458.0	17.57	322.38	5,068.95	1,541.99	-1,189.73	1,947.60	0.74	-0.67	-0.97	203.39
	NORMAL	5,552.0	16.48	322.60	5,158.83	1,563.82	-1,206.49	1,975.12	1.16	-1.16	0.23	176.72
	NORMAL	5,648.0	14.36	325.91	5,251.37	1,584.50	-1,221.43	2,000.62	2.39	-2.21	3.45	159.04
8/16/2011	NORMAL	5,743.0	12.76	325.77	5,343.72	1,602.93	-1,233.94	2,022.85	1.68	-1.68	-0.15	181.11

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 (°)	
8/16/2011	NORMAL	5,839.0	11.72	325.13	5,437.54	1,619.70	-1,245.48	2,043.17	1.09	-1.08	-0.67	187.12	
	NORMAL	5,934.0	9.66	319.48	5,530.88	1,633.67	-1,256.17	2,060.77	2.43	-2.17	-5.95	204.21	
	NORMAL	6,029.0	8.92	319.40	5,624.64	1,645.33	-1,266.14	2,076.09	0.78	-0.78	-0.08	180.96	
	NORMAL	6,125.0	8.27	318.94	5,719.56	1,656.18	-1,275.52	2,090.41	0.68	-0.68	-0.48	185.81	
	NORMAL	6,220.0	7.35	322.10	5,813.68	1,666.13	-1,283.74	2,103.31	1.07	-0.97	3.33	156.54	
	NORMAL	6,315.0	7.29	321.80	5,907.90	1,675.66	-1,291.20	2,115.42	0.07	-0.06	-0.32	212.35	
	NORMAL	6,410.0	7.10	326.14	6,002.16	1,685.27	-1,298.20	2,127.30	0.61	-0.20	4.57	111.41	
	NORMAL	6,506.0	6.30	325.83	6,097.50	1,694.56	-1,304.47	2,138.48	0.83	-0.83	-0.32	182.43	
	NORMAL	6,601.0	4.76	332.61	6,192.06	1,702.37	-1,309.21	2,147.55	1.76	-1.62	7.14	160.36	
	NORMAL	6,697.0	4.56	338.00	6,287.74	1,709.45	-1,312.47	2,155.14	0.50	-0.21	5.61	117.22	
	NORMAL	6,790.0	3.40	320.98	6,380.52	1,715.02	-1,315.59	2,161.46	1.77	-1.25	-18.30	217.24	
	NORMAL	6,884.0	2.49	312.80	6,474.39	1,718.57	-1,318.84	2,166.26	1.06	-0.97	-8.70	200.74	
	NORMAL	6,979.0	2.30	335.23	6,569.31	1,721.70	-1,321.16	2,170.15	1.00	-0.20	23.61	112.52	
	NORMAL	7,073.0	2.09	8.93	6,663.25	1,725.11	-1,321.68	2,173.16	1.37	-0.22	35.85	115.82	
8/17/2011	NORMAL	7,168.0	1.44	82.75	6,758.21	1,726.97	-1,320.23	2,173.74	2.30	-0.68	77.71	140.67	
	NORMAL	7,262.0	1.20	134.83	6,852.19	1,726.43	-1,318.36	2,172.17	1.25	-0.26	55.40	126.57	
	NORMAL	7,357.0	1.20	170.15	6,947.17	1,724.74	-1,317.48	2,170.30	0.77	0.00	37.18	107.66	
	NORMAL	7,452.0	1.21	176.22	7,042.15	1,722.76	-1,317.25	2,168.59	0.13	0.01	6.39	88.56	
	NORMAL	7,547.0	1.14	181.75	7,137.13	1,720.82	-1,317.21	2,167.03	0.14	-0.07	5.82	124.43	
	NORMAL	7,642.0	0.23	184.26	7,232.12	1,719.68	-1,317.25	2,166.16	0.96	-0.96	2.64	179.37	
	NORMAL	7,737.0	1.14	214.06	7,327.11	1,718.71	-1,317.80	2,165.73	1.00	0.96	31.37	36.73	
	NORMAL	7,832.0	0.94	232.15	7,422.10	1,717.45	-1,318.94	2,165.43	0.40	-0.21	19.04	130.18	
	NORMAL	7,927.0	0.47	222.35	7,517.09	1,716.68	-1,319.82	2,165.37	0.51	-0.49	-10.32	189.52	
	NORMAL	8,022.0	0.98	224.41	7,612.08	1,715.81	-1,320.65	2,165.19	0.54	0.54	2.17	3.96	
	NORMAL	8,117.0	0.98	206.31	7,707.07	1,714.51	-1,321.58	2,164.73	0.32	0.00	-19.05	260.95	
	8/18/2011	NORMAL	8,212.0	0.13	312.59	7,802.06	1,713.85	-1,322.02	2,164.48	1.08	-0.89	111.87	173.00
		NORMAL	8,307.0	0.42	87.75	7,897.06	1,713.94	-1,321.75	2,164.38	0.55	0.31	142.27	145.31
		NORMAL	8,403.0	0.81	215.33	7,993.06	1,713.40	-1,321.79	2,163.98	1.16	0.41	132.90	144.92
NORMAL		8,498.0	1.76	201.94	8,088.03	1,711.50	-1,322.72	2,163.05	1.04	1.00	-14.09	335.69	
NORMAL		8,594.0	2.58	218.25	8,183.97	1,708.43	-1,324.61	2,161.79	1.06	0.85	16.99	45.32	
NORMAL		8,689.0	2.87	223.67	8,278.86	1,705.03	-1,327.58	2,160.92	0.41	0.31	5.71	44.35	
NORMAL		8,785.0	3.21	222.92	8,374.72	1,701.33	-1,331.07	2,160.14	0.36	0.35	-0.78	352.95	
NORMAL		8,860.0	3.28	223.80	8,449.60	1,698.24	-1,333.98	2,159.49	0.11	0.09	1.17	35.88	
NORMAL		8,917.0	3.28	223.80	8,506.51	1,695.89	-1,336.24	2,159.01	0.00	0.00	0.00	0.00	

3 Charts

3.1 Vertical Section View



3.2 Plan View

