

1 General

1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

1.2 Well Information

Well	PA 543-20	Wellbore No.	OH
Well Name	PA 543-20	Common Name	PA 543-20
Project	PA 20-06S-095W	Site	DOE 1-W-20 Pad
Vertical Section Azimuth	23.31 (°)	North Reference	True
Origin N/S		Origin E/W	
Spud Date	9/30/2011	UWI	PA 543-20
Active Datum	KB @6,255.5ft (above Mean Sea Level)		

2 Survey Name

2.1 Survey Name: 1

Survey Name	1	Company	
Started	9/22/2011	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)	DLeg (°/100ft)	Bulld (°/100ft)	Turn (°/100ft)	TFace (°)
9/22/2011	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/23/2011	NORMAL	83.0	0.44	268.33	83.00	-0.01	-0.32	-0.13	0.53	0.53	0.00	268.33
	NORMAL	113.0	0.09	100.20	113.00	-0.02	-0.41	-0.18	1.76	-1.17	-560.43	182.01
	NORMAL	144.0	0.79	79.90	144.00	0.02	-0.18	-0.05	2.28	2.26	-65.48	337.17
	NORMAL	174.0	0.79	72.42	173.99	0.12	0.22	0.19	0.34	0.00	-24.93	266.26
	NORMAL	205.0	0.97	48.87	204.99	0.35	0.63	0.57	1.29	0.58	-75.97	284.36
	NORMAL	235.0	1.76	37.62	234.98	0.88	1.10	1.25	2.77	2.63	-37.50	335.58
	NORMAL	265.0	2.46	28.30	264.96	1.82	1.68	2.33	2.59	2.33	-31.07	329.18
	NORMAL	295.0	3.61	23.55	294.92	3.25	2.37	3.92	3.92	3.83	-15.83	345.29
	NORMAL	325.0	4.57	17.75	324.84	5.25	3.11	6.05	3.48	3.20	-19.33	333.78
	NORMAL	355.0	5.37	16.88	354.73	7.73	3.88	8.64	2.68	2.67	-2.90	354.18
	NORMAL	386.0	6.86	18.98	385.55	10.87	4.90	11.93	4.86	4.81	6.77	9.58
	NORMAL	416.0	8.01	21.88	415.30	14.51	6.27	15.80	4.03	3.83	9.67	19.51
	NORMAL	446.0	8.71	23.03	444.98	18.54	7.93	20.16	2.40	2.33	3.83	14.00
	NORMAL	476.0	9.94	23.03	474.58	23.01	9.84	25.02	4.10	4.10	0.00	0.00
	NORMAL	506.0	11.17	23.99	504.08	28.05	12.03	30.52	4.14	4.10	3.20	8.61
	NORMAL	537.0	12.05	22.76	534.44	33.78	14.50	36.76	2.95	2.84	-3.97	343.69
	NORMAL	628.0	13.20	23.91	623.24	52.03	22.39	56.65	1.29	1.26	1.26	12.89
	NORMAL	700.0	13.54	24.42	693.29	67.22	29.21	73.29	0.50	0.47	0.71	19.38
	NORMAL	790.0	13.25	22.06	780.84	86.38	37.43	94.14	0.69	-0.32	-2.62	240.91
	NORMAL	881.0	14.01	20.07	869.28	106.39	45.13	115.56	0.98	0.84	-2.19	327.35

2.1.2 Survey Stations (Continued)

Date	Type	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Build (°/100ft)	Turn (°/100ft)	TFace (°)
10/1/2011	NORMAL	940.0	13.74	23.09	926.56	119.54	50.33	129.70	1.31	-0.46	5.12	111.91
	NORMAL	1,062.0	14.11	24.11	1,044.97	146.44	62.09	159.06	0.36	0.30	0.84	34.06
10/2/2011	NORMAL	1,157.0	14.63	23.23	1,137.00	168.04	71.55	182.63	0.59	0.55	-0.93	336.79
	NORMAL	1,252.0	13.63	24.32	1,229.12	189.26	80.89	205.82	1.09	-1.05	1.15	165.63
	NORMAL	1,347.0	12.61	23.46	1,321.64	208.98	89.63	227.39	1.09	-1.07	-0.91	190.42
	NORMAL	1,442.0	13.04	23.58	1,414.27	228.31	98.05	248.47	0.45	0.45	0.13	3.60
	NORMAL	1,537.0	12.96	22.33	1,506.84	247.99	106.38	269.84	0.31	-0.08	-1.32	253.51
	NORMAL	1,632.0	12.35	21.60	1,599.53	267.29	114.17	290.65	0.66	-0.64	-0.77	194.34
	NORMAL	1,728.0	12.01	25.69	1,693.37	285.84	122.28	310.89	0.97	-0.35	4.26	113.50
	NORMAL	1,823.0	12.74	25.38	1,786.16	304.21	131.05	331.23	0.77	0.77	-0.33	354.65
	NORMAL	1,917.0	11.99	24.75	1,877.98	322.44	139.58	351.35	0.81	-0.80	-0.67	189.89
	NORMAL	2,012.0	12.58	24.15	1,970.81	340.84	147.95	371.56	0.64	0.62	-0.63	347.50
	NORMAL	2,107.0	12.41	23.93	2,063.56	359.61	156.32	392.11	0.19	-0.18	-0.23	195.53
	NORMAL	2,203.0	12.59	24.74	2,157.28	378.54	164.88	412.89	0.26	0.19	0.84	44.64
	NORMAL	2,585.0	12.73	21.89	2,529.79	456.37	198.00	497.47	0.18	-0.09	0.67	122.77
	NORMAL	2,681.0	12.08	21.39	2,623.55	475.54	205.60	518.08	0.69	-0.68	-0.52	189.14
	NORMAL	2,776.0	11.81	23.09	2,716.50	493.74	213.04	537.74	0.47	-0.28	1.79	128.33
	NORMAL	2,871.0	10.73	22.63	2,809.66	510.84	220.26	556.30	1.14	-1.14	-0.48	184.53
	NORMAL	2,967.0	10.03	22.84	2,904.09	526.80	226.94	573.60	0.73	-0.73	0.22	177.01
	NORMAL	3,063.0	10.42	23.88	2,998.57	542.44	233.70	590.64	0.45	0.41	1.08	25.84
	NORMAL	3,158.0	10.77	24.56	3,091.95	558.37	240.87	608.10	0.39	0.37	0.72	19.99
	NORMAL	3,254.0	11.19	25.25	3,186.19	574.95	248.57	626.38	0.46	0.44	0.72	17.71
	NORMAL	3,349.0	11.18	21.75	3,279.39	591.84	255.91	644.80	0.71	-0.01	-3.68	267.44
	NORMAL	3,444.0	11.82	21.25	3,372.48	609.46	262.85	663.73	0.68	0.67	-0.53	350.90
	NORMAL	3,540.0	12.28	22.76	3,466.36	628.04	270.37	683.77	0.58	0.48	1.57	35.16
	NORMAL	3,635.0	13.11	22.98	3,559.04	647.28	278.48	704.64	0.88	0.87	0.23	3.44
	NORMAL	3,730.0	14.19	23.48	3,651.35	667.88	287.33	727.06	1.14	1.14	0.53	6.48
	NORMAL	3,826.0	13.64	23.99	3,744.54	689.01	296.62	750.15	0.59	-0.57	0.53	167.68
	NORMAL	3,921.0	13.73	23.97	3,836.84	709.55	305.75	772.62	0.09	0.09	-0.02	356.98
	NORMAL	4,016.0	14.12	23.10	3,929.05	730.51	314.88	795.48	0.47	0.41	-0.92	331.35
	NORMAL	4,111.0	13.76	23.54	4,021.25	751.52	323.94	818.37	0.40	-0.38	0.46	163.81
	NORMAL	4,207.0	13.18	22.76	4,114.61	772.08	332.73	840.73	0.63	-0.60	-0.81	197.01
10/2/2011	NORMAL	2,394.0	12.93	23.32	2,343.56	417.04	182.16	455.09	0.29	0.17	-1.04	305.24
10/2/2011	NORMAL	2,490.0	12.82	21.25	2,437.15	436.83	190.27	476.47	0.49	-0.11	-2.16	255.58
10/2/2011	NORMAL	2,298.0	12.77	24.32	2,249.96	397.51	173.54	433.74	0.21	0.19	-0.44	332.67
10/3/2011	NORMAL	4,302.0	13.05	23.11	4,207.13	791.94	341.13	862.28	0.16	-0.14	0.37	148.75
	NORMAL	4,398.0	12.95	21.86	4,300.67	811.89	349.39	883.88	0.31	-0.10	-1.30	249.81
	NORMAL	4,493.0	12.56	20.96	4,393.33	831.41	357.05	904.84	0.46	-0.41	-0.95	206.56
	NORMAL	4,589.0	12.76	23.25	4,486.99	850.90	364.97	925.87	0.56	0.21	2.39	69.39
	NORMAL	4,684.0	12.86	23.35	4,579.63	870.25	373.30	946.93	0.11	0.11	0.11	12.55
	NORMAL	4,780.0	12.44	25.13	4,673.30	889.42	381.92	967.95	0.60	-0.44	1.85	138.00
	NORMAL	4,875.0	12.46	24.95	4,766.06	907.97	390.59	988.42	0.05	0.02	-0.19	297.18
	NORMAL	4,971.0	12.27	25.01	4,859.84	926.61	399.27	1,008.97	0.20	-0.20	0.06	176.16
	NORMAL	5,067.0	12.13	24.53	4,953.67	945.03	407.77	1,029.25	0.18	-0.15	-0.50	215.69
	NORMAL	5,162.0	12.04	23.65	5,046.56	963.18	415.89	1,049.14	0.22	-0.09	-0.93	243.53
	NORMAL	5,258.0	11.81	23.52	5,140.49	981.36	423.83	1,068.97	0.24	-0.24	-0.14	186.60
	NORMAL	5,353.0	11.56	23.01	5,233.52	999.04	431.43	1,088.21	0.28	-0.26	-0.54	202.20
	NORMAL	5,449.0	10.71	24.58	5,327.72	1,016.00	438.90	1,106.75	0.94	-0.89	1.64	161.14
	NORMAL	5,543.0	10.69	27.68	5,420.08	1,031.67	446.58	1,124.18	0.61	-0.02	3.30	93.51
	NORMAL	5,639.0	10.27	28.42	5,514.48	1,047.08	454.79	1,141.58	0.46	-0.44	0.77	162.59
	NORMAL	5,734.0	9.85	30.19	5,608.02	1,061.55	462.91	1,158.08	0.55	-0.44	1.86	144.51
	NORMAL	5,830.0	8.44	33.14	5,702.80	1,074.55	470.89	1,173.18	1.55	-1.47	3.07	163.06
	NORMAL	5,925.0	7.60	32.04	5,796.87	1,085.71	478.04	1,186.25	0.90	-0.88	-1.16	189.81
	NORMAL	6,020.0	6.73	27.71	5,891.13	1,095.97	483.96	1,198.01	1.08	-0.92	-4.56	209.70
10/4/2011	NORMAL	6,116.0	6.73	22.02	5,986.47	1,106.16	488.68	1,209.25	0.69	0.00	-5.93	267.17
	NORMAL	6,211.0	5.48	10.62	6,080.93	1,115.78	491.60	1,219.24	1.83	-1.32	-12.00	218.55
	NORMAL	6,306.0	4.71	13.70	6,175.55	1,124.03	493.36	1,227.51	0.86	-0.81	3.24	161.97

2.1.2 Survey Stations (Continued)

Date	Type	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Build (°/100ft)	Turn (°/100ft)	TFace (°)
10/4/2011	NORMAL	6,402.0	3.68	18.31	6,271.29	1,130.78	495.27	1,234.46	1.13	-1.07	4.80	164.16
	NORMAL	6,497.0	2.62	12.28	6,366.15	1,135.80	496.69	1,239.63	1.17	-1.12	-6.35	194.36
	NORMAL	6,593.0	0.93	347.59	6,462.10	1,138.70	496.98	1,242.42	1.89	-1.76	-25.72	192.35
	NORMAL	6,687.0	1.15	224.50	6,556.09	1,138.78	496.16	1,242.16	1.95	0.23	-130.95	211.74
	NORMAL	6,781.0	1.51	212.23	6,650.07	1,137.06	494.84	1,240.06	0.49	0.38	-13.05	315.41
	NORMAL	6,876.0	0.55	141.14	6,745.05	1,135.64	494.46	1,238.61	1.51	-1.01	-74.83	201.34
	NORMAL	6,970.0	0.66	129.97	6,839.05	1,134.94	495.15	1,238.24	0.17	0.12	-11.88	307.33
10/5/2011	NORMAL	7,065.0	1.08	161.13	6,934.04	1,133.74	495.86	1,237.42	0.65	0.44	32.80	64.69
	NORMAL	7,159.0	0.47	212.04	7,028.03	1,132.58	495.95	1,236.38	0.92	-0.65	54.16	155.04
	NORMAL	7,253.0	0.97	325.07	7,122.03	1,132.90	495.28	1,236.42	1.31	0.53	120.24	133.58
	NORMAL	7,348.0	0.72	313.68	7,217.02	1,133.98	494.39	1,237.05	0.32	-0.26	-11.99	208.29
	NORMAL	7,443.0	0.85	258.42	7,312.01	1,134.25	493.27	1,236.86	0.78	0.14	-58.17	251.36
	NORMAL	7,538.0	1.31	241.53	7,406.99	1,133.59	491.63	1,235.60	0.58	0.48	-17.78	316.68
	NORMAL	7,633.0	1.25	224.24	7,501.97	1,132.33	489.95	1,233.78	0.41	-0.06	-18.20	252.59
	NORMAL	7,729.0	0.83	213.84	7,597.95	1,131.00	488.83	1,232.12	0.48	-0.44	-10.83	199.06
	NORMAL	7,918.0	1.33	246.80	7,786.92	1,129.00	486.05	1,229.18	0.41	0.26	17.44	68.43
	NORMAL	8,014.0	0.29	269.19	7,882.91	1,128.56	484.79	1,228.27	1.11	-1.08	23.32	174.06
	NORMAL	8,014.0	0.29	269.19	7,882.91	1,128.56	484.79	1,228.27	1.11	-1.08	23.32	174.06
	NORMAL	8,109.0	0.43	162.55	7,977.91	1,128.21	484.65	1,227.90	0.00	0.00	0.00	0.00
10/6/2011	NORMAL	8,203.0	0.42	154.01	8,071.90	1,127.57	484.91	1,227.41	0.07	-0.01	-9.09	256.78
	NORMAL	8,298.0	0.90	196.09	8,166.90	1,126.54	484.85	1,226.45	0.69	0.51	44.29	67.65
	NORMAL	8,394.0	1.71	202.09	8,262.87	1,124.48	484.11	1,224.27	0.85	0.84	6.25	12.58
	NORMAL	8,490.0	2.20	215.16	8,358.82	1,121.65	482.51	1,221.03	0.69	0.51	13.61	48.96
	NORMAL	8,585.0	2.73	220.21	8,453.73	1,118.43	480.00	1,217.08	0.60	0.56	5.32	24.82
	NORMAL	8,623.0	2.82	222.16	8,491.68	1,117.05	478.78	1,215.33	0.34	0.24	5.13	47.35
	NORMAL	8,680.0	2.82	222.16	8,548.62	1,114.97	476.90	1,212.68	0.00	0.00	0.00	0.00

2.2 Survey Name: Survey #1

Survey Name	Survey #1	Company	sicentific drilling
Started	9/30/2011	Ended	
Tool Name	MWD	Engineer	

2.2.1 Tie On Point

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)
0.0	0.00	268.33	0.00	0.00	0.00

2.2.2 Survey Stations

Date	Type	MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Build (°/100ft)	Turn (°/100ft)	TFace (°)
9/23/2011	NORMAL	50.0	0.44	268.33	50.00	-0.01	-0.19	-0.08	0.88	0.88	0.00	268.33
9/30/2011	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00