

1 General

1.1 Customer Information

Company	PICEANCE VLY
Representative	
Address	

1.2 Well Information

Well	PA 521-29	Wellbore No.	OH
Well Name	PA 521-29	Common Name	PA 521-29
Project	PA 20-06S-095W	Site	DOE 1-W-20 Pad
Vertical Section Azimuth	222.06 (°)	North Reference	True
Origin N/S		Origin E/W	
Spud Date	12/5/2011	UWI	PA 521-29
Active Datum	KB @6,255.5ft (above Mean Sea Level)		

2 Survey Name

2.1 Survey Name: Survey #1

Survey Name	Survey #1	Company	
Started	12/5/2011	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)	Buidl (°/100ft)	Turn (°/100ft)	TFace (°)
12/5/2011	Tie On	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/5/2011	NORMAL	83.0	0.70	43.59	83.00	0.37	0.35	-0.51	0.84	0.84	0.00	43.59
	NORMAL	116.0	0.44	79.80	116.00	0.54	0.61	-0.81	1.31	-0.79	109.73	143.00
	NORMAL	146.0	0.70	161.02	146.00	0.38	0.79	-0.81	2.56	0.87	270.73	115.71
	NORMAL	176.0	1.41	212.26	175.99	-0.10	0.65	-0.36	3.72	2.37	170.80	80.56
	NORMAL	207.0	1.94	208.74	206.98	-0.89	0.19	0.53	1.74	1.71	-11.35	347.25
	NORMAL	237.0	2.55	201.09	236.95	-1.95	-0.29	1.65	2.26	2.03	-25.50	329.98
	NORMAL	268.0	2.90	196.61	267.92	-3.35	-0.76	3.00	1.32	1.13	-14.45	326.43
	NORMAL	298.0	2.90	194.59	297.88	-4.81	-1.17	4.36	0.34	0.00	-6.73	268.99
	NORMAL	329.0	3.52	189.93	328.83	-6.51	-1.53	5.86	2.17	2.00	-15.03	334.84
	NORMAL	359.0	4.22	194.50	358.76	-8.48	-1.97	7.62	2.55	2.33	15.23	26.07
	NORMAL	389.0	4.40	187.38	388.68	-10.69	-2.39	9.54	1.88	0.60	-23.73	285.02
	NORMAL	419.0	5.01	188.17	418.58	-13.13	-2.73	11.57	2.04	2.03	2.63	6.46
	NORMAL	450.0	5.63	190.28	449.44	-15.97	-3.19	13.99	2.10	2.00	6.81	18.57
	NORMAL	480.0	6.42	187.56	479.28	-19.08	-3.67	16.62	2.80	2.63	-9.07	338.77
12/6/2011	NORMAL	510.0	7.13	191.25	509.07	-22.57	-4.26	19.61	2.77	2.37	12.30	33.35
	NORMAL	540.0	7.57	198.90	538.82	-26.26	-5.26	23.02	3.57	1.47	25.50	69.62
	NORMAL	570.0	8.27	202.15	568.54	-30.13	-6.71	26.87	2.77	2.33	10.83	34.23
	NORMAL	600.0	8.36	202.36	598.22	-34.14	-8.36	30.95	0.32	0.30	0.70	18.75
	NORMAL	630.0	8.89	207.60	627.88	-38.22	-10.26	35.25	3.16	1.77	17.47	58.61
	NORMAL	661.0	9.41	209.44	658.49	-42.55	-12.62	40.04	1.92	1.68	5.94	30.28

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 (°)
12/6/2011	NORMAL	673.0	9.35	210.78	670.33	-44.24	-13.60	41.95	1.89	-0.50	11.17	106.02
	NORMAL	703.0	9.50	214.86	699.92	-48.36	-16.26	46.80	2.28	0.50	13.60	79.36
	NORMAL	733.0	9.90	216.18	729.49	-52.48	-19.20	51.82	1.53	1.33	4.40	29.73
	NORMAL	763.0	10.36	220.16	759.03	-56.62	-22.46	57.08	2.79	1.53	13.27	58.66
	NORMAL	793.0	10.67	221.60	788.52	-60.76	-26.04	62.56	1.35	1.03	4.80	41.00
	NORMAL	884.0	11.68	223.36	877.80	-73.75	-37.96	80.19	1.17	1.11	1.93	19.53
	NORMAL	975.0	12.13	221.94	966.84	-87.56	-50.68	98.96	0.59	0.49	-1.56	326.24
	NORMAL	1,070.0	12.57	221.71	1,059.64	-102.70	-64.22	119.28	0.47	0.46	-0.24	353.51
	NORMAL	1,165.0	12.12	224.09	1,152.44	-117.59	-78.04	139.58	0.71	-0.47	2.51	132.65
	NORMAL	1,260.0	12.08	222.23	1,245.33	-132.11	-91.66	159.49	0.41	-0.04	-1.96	263.23
	NORMAL	1,355.0	12.79	222.48	1,338.10	-147.23	-105.45	179.95	0.75	0.75	0.26	4.46
	NORMAL	1,450.0	12.72	225.38	1,430.76	-162.33	-119.99	200.90	0.68	-0.07	3.05	97.65
	NORMAL	1,545.0	12.41	222.66	1,523.49	-177.18	-134.35	221.55	0.70	-0.33	-2.86	241.03
	NORMAL	1,640.0	11.41	223.10	1,616.44	-191.55	-147.69	241.15	1.06	-1.05	0.46	175.03
	NORMAL	1,736.0	11.44	221.39	1,710.54	-205.62	-160.47	260.17	0.35	0.03	-1.78	274.22
	NORMAL	1,831.0	12.02	220.33	1,803.55	-220.23	-173.11	279.48	0.65	0.61	-1.12	339.10
	NORMAL	1,925.0	12.45	221.29	1,895.42	-235.31	-186.13	299.39	0.51	0.46	1.02	25.79
	NORMAL	2,020.0	11.51	222.44	1,988.35	-250.00	-199.28	319.11	1.02	-0.99	1.21	166.31
	NORMAL	2,115.0	11.26	226.57	2,081.48	-263.37	-212.41	337.83	0.90	-0.26	4.35	109.07
	NORMAL	2,211.0	11.78	225.97	2,175.55	-276.62	-226.26	356.95	0.56	0.54	-0.63	346.73
	NORMAL	2,307.0	11.67	225.03	2,269.54	-290.30	-240.18	376.43	0.23	-0.11	-0.98	239.60
12/7/2011	NORMAL	2,402.0	12.29	223.05	2,362.47	-304.48	-253.88	396.13	0.78	0.65	-2.08	325.49
	NORMAL	2,498.0	11.66	225.13	2,456.39	-318.79	-267.73	416.03	0.80	-0.66	2.17	146.60
	NORMAL	2,593.0	12.14	223.57	2,549.34	-332.80	-281.42	435.61	0.61	0.51	-1.64	325.41
	NORMAL	2,689.0	13.21	222.49	2,643.00	-348.20	-295.78	456.67	1.14	1.11	-1.13	346.98
	NORMAL	2,784.0	12.88	221.31	2,735.55	-364.16	-310.11	478.11	0.45	-0.35	-1.24	218.33
	NORMAL	2,879.0	11.41	221.61	2,828.42	-379.14	-323.34	498.09	1.55	-1.55	0.32	177.69
	NORMAL	2,975.0	11.65	220.03	2,922.49	-393.66	-335.88	517.28	0.41	0.25	-1.65	306.46
12/9/2011	NORMAL	3,068.0	12.53	219.88	3,013.42	-408.59	-348.38	536.74	0.95	0.95	-0.16	357.88
	NORMAL	3,163.0	12.75	221.79	3,106.12	-424.32	-361.98	557.52	0.50	0.23	2.01	63.17
	NORMAL	3,259.0	12.68	225.65	3,199.77	-439.58	-376.57	578.63	0.89	-0.07	4.02	96.59
	NORMAL	3,354.0	11.88	223.65	3,292.59	-453.94	-390.78	598.81	0.95	-0.84	-2.11	207.03
	NORMAL	3,449.0	11.23	227.90	3,385.67	-467.22	-404.39	617.79	1.13	-0.68	4.47	129.43
	NORMAL	3,545.0	11.43	227.13	3,479.80	-479.96	-418.30	636.57	0.26	0.21	-0.80	322.52
	NORMAL	3,640.0	12.33	226.28	3,572.76	-493.37	-432.53	656.06	0.97	0.95	-0.89	348.58
	NORMAL	3,736.0	11.73	226.47	3,666.65	-507.18	-447.01	676.01	0.63	-0.63	0.20	176.32
	NORMAL	3,831.0	12.17	225.70	3,759.60	-520.82	-461.18	695.63	0.49	0.46	-0.81	339.70
	NORMAL	3,926.0	11.70	226.42	3,852.54	-534.46	-475.32	715.23	0.52	-0.49	0.76	162.77
	NORMAL	4,021.0	10.96	222.99	3,945.69	-547.70	-488.46	733.86	1.05	-0.78	-3.61	220.65
	NORMAL	4,116.0	11.52	222.27	4,038.87	-561.33	-501.00	752.38	0.61	0.59	-0.76	345.58
	NORMAL	4,211.0	12.23	221.91	4,131.83	-575.84	-514.10	771.93	0.75	0.75	-0.38	353.87
	NORMAL	4,307.0	12.01	219.65	4,225.70	-591.10	-527.27	792.08	0.54	-0.23	-2.35	244.02
	NORMAL	4,403.0	11.60	223.76	4,319.67	-605.76	-540.32	811.70	0.97	-0.43	4.28	118.00
	NORMAL	4,498.0	11.46	224.86	4,412.75	-619.35	-553.58	830.68	0.27	-0.15	1.16	123.02
	NORMAL	4,594.0	11.01	224.56	4,506.91	-632.64	-566.74	849.36	0.47	-0.47	-0.31	187.25
	NORMAL	4,689.0	11.40	226.20	4,600.10	-645.60	-579.88	867.79	0.53	0.41	1.73	40.06
	NORMAL	4,785.0	11.52	222.95	4,694.19	-659.18	-593.26	886.84	0.68	0.12	-3.39	278.93
	NORMAL	4,880.0	11.94	222.00	4,787.20	-673.43	-606.30	906.15	0.49	0.44	-1.00	334.84
	NORMAL	4,976.0	10.81	220.89	4,881.31	-687.62	-618.84	925.08	1.20	-1.18	-1.16	190.42
	NORMAL	5,072.0	11.50	219.51	4,975.50	-701.80	-630.82	943.64	0.77	0.72	-1.44	338.17
	NORMAL	5,167.0	11.86	221.51	5,068.53	-716.42	-643.31	962.86	0.57	0.38	2.11	49.34
	NORMAL	5,263.0	11.74	220.95	5,162.50	-731.18	-656.25	982.49	0.17	-0.12	-0.58	223.39
	NORMAL	5,358.0	11.10	223.87	5,255.62	-745.08	-668.92	1,001.30	0.91	-0.67	3.07	139.33
	NORMAL	5,453.0	9.53	226.54	5,349.09	-757.08	-680.97	1,018.28	1.73	-1.65	2.81	164.37
	NORMAL	5,548.0	8.14	227.92	5,442.96	-767.00	-691.67	1,032.81	1.48	-1.46	1.45	172.01
	NORMAL	5,644.0	6.80	226.39	5,538.14	-775.47	-700.83	1,045.24	1.41	-1.40	-1.59	187.69
12/10/2011	NORMAL	5,739.0	5.04	221.73	5,632.63	-782.47	-707.68	1,055.02	1.92	-1.85	-4.91	192.96

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 (°)
12/10/2011	NORMAL	5,835.0	3.78	225.91	5,728.34	-787.82	-712.76	1,062.39	1.35	-1.31	4.35	167.77
	NORMAL	5,930.0	2.90	231.71	5,823.18	-791.48	-716.90	1,067.89	0.99	-0.93	6.11	161.87
	NORMAL	6,025.0	1.23	202.79	5,918.12	-793.91	-719.18	1,071.22	2.02	-1.76	-30.44	198.07
	NORMAL	6,121.0	0.45	46.72	6,014.11	-794.60	-719.30	1,071.82	1.72	-0.81	-162.57	186.35
	NORMAL	6,216.0	0.67	77.16	6,109.11	-794.23	-718.49	1,070.99	0.38	0.23	32.04	69.39
12/11/2011	NORMAL	6,311.0	0.48	102.89	6,204.10	-794.19	-717.56	1,070.34	0.33	-0.20	27.08	138.75
	NORMAL	6,406.0	0.67	102.89	6,299.10	-794.40	-716.63	1,069.88	0.20	0.20	0.00	0.00
	NORMAL	6,502.0	0.17	143.78	6,395.10	-794.64	-716.00	1,069.63	0.58	-0.52	42.59	168.39
	NORMAL	6,597.0	0.34	240.23	6,490.10	-794.90	-716.16	1,069.93	0.42	0.18	101.53	121.64
	NORMAL	6,692.0	0.67	273.20	6,585.09	-795.01	-716.96	1,070.55	0.45	0.35	34.71	58.65
	NORMAL	6,786.0	1.12	308.71	6,679.08	-794.40	-718.23	1,070.94	0.74	0.48	37.78	69.62
	NORMAL	6,880.0	1.17	284.79	6,773.06	-793.58	-719.87	1,071.44	0.51	0.05	-25.45	263.93
	NORMAL	6,975.0	1.13	293.60	6,868.04	-792.96	-721.67	1,072.18	0.19	-0.04	9.27	107.13
	NORMAL	7,069.0	1.84	324.64	6,962.01	-791.36	-723.39	1,072.14	1.12	0.76	33.02	64.79
	NORMAL	7,164.0	2.75	320.07	7,056.94	-788.37	-725.74	1,071.49	0.98	0.96	-4.81	346.34
	NORMAL	7,258.0	1.93	342.62	7,150.86	-785.13	-727.66	1,070.37	1.30	-0.87	23.99	142.58
	NORMAL	7,353.0	0.75	349.48	7,245.83	-782.99	-728.25	1,069.18	1.25	-1.24	7.22	175.68
	NORMAL	7,448.0	0.57	123.28	7,340.83	-782.64	-727.97	1,068.73	1.28	-0.19	140.84	160.23
	NORMAL	7,543.0	0.80	169.84	7,435.82	-783.55	-727.45	1,069.07	0.61	0.24	49.01	91.96
	NORMAL	7,638.0	1.47	187.53	7,530.80	-785.41	-727.50	1,070.48	0.79	0.71	18.62	36.64
12/12/2011	NORMAL	7,733.0	1.06	215.62	7,625.78	-787.33	-728.17	1,072.35	0.77	-0.43	29.57	136.98
	NORMAL	7,828.0	0.79	237.24	7,720.77	-788.40	-729.23	1,073.86	0.46	-0.28	22.76	138.20
	NORMAL	7,923.0	1.11	262.11	7,815.76	-788.88	-730.69	1,075.20	0.54	0.34	26.18	65.06
	NORMAL	8,018.0	1.53	259.68	7,910.73	-789.23	-732.85	1,076.91	0.45	0.44	-2.56	351.19
	NORMAL	8,113.0	2.08	246.59	8,005.68	-790.15	-735.68	1,079.48	0.72	0.58	-13.78	316.48
	NORMAL	8,208.0	2.65	235.92	8,100.60	-792.06	-739.09	1,083.18	0.76	0.60	-11.23	317.03
	NORMAL	8,303.0	3.20	228.04	8,195.48	-795.07	-742.88	1,087.95	0.71	0.58	-8.29	319.69
	NORMAL	8,349.0	3.29	228.04	8,241.41	-796.81	-744.81	1,090.54	0.20	0.20	0.00	0.00
	NORMAL	8,411.0	3.29	28.04	8,303.37	-796.43	-745.30	1,090.59	10.45	0.00	258.06	169.98